Strategic Plan

2000—2005

2004 Update

Healthy Missourians Living in an Environment that is Safe, Supportive, and Conducive to a Healthy Lifestyle

From the Director

Each day, the Missouri Department of Health and Senior Services is responsible for protecting and promoting the health of all Missourians, at every stage in their lives. This includes health status surveillance, regulatory/quality assurance, disease and health hazards investigation, information and education as well as direct services.

Missouri allocates only 1.2% of all statewide net general revenue to support this work. The department relies primarily on federal funding which is restricted to specific programs and services. General revenue funding has been reduced by $24,355,658 (23%) from FY01 to FY04.

Our strategic plan is organized around the health and safety needs of the following groups of Missourians: Infants and Children, Adolescents, Adults, and Seniors. It includes special emphasis on a safe environment. For each of these result areas, an overview explains the importance of the result, why it is a critical issue for Missouri, and success indicators to measure progress. Annual targets out to 2005 represent objectives set for each of the success indicators. We also include trends for each area, as well as how Missouri compares with other states or the nation as a whole. Interventions, along with the Department's strategies for supporting them, complete the plan.

However, implementation of any plan requires resources and the overall impact on infrastructure due to staff reductions is yet to be determined. Additional reductions in program allocations will result in radical triaging or total elimination of discretionary services.

Table of Contents

Vision

Healthy Missourians living in an environment that is safe, supportive, and conducive to a healthy lifestyle.

Mission

Department of Health and Senior Services protects and promotes quality of life and health for all Missourians by developing and implementing programs and systems that provide:

- Information and education
- Effective regulation and oversight
- Quality services
- Surveillance of diseases and conditions

Values

In pursuing our mission, we value:

Excellence — We strive for excellence in services to our customers and in leadership throughout the public health and senior services system.

Responsiveness — We are committed to a strong, responsive public health and senior services system that meets the challenges of promoting and protecting the public's health and adapts to a rapidly changing environment.

Diversity — We believe that public health and senior services must meet the needs of diverse communities. We are committed to diversity in our workforce, which results in greater creativity and customer focus.

Accountability — We respect the valuable resources entrusted to us. We are committed to fiscal and program accountability and evaluating our performance in terms of benefit to the public.

Integrity — We are committed to treating all people honestly, fairly and respectfully.

Teamwork — We are committed to working in collaboration with others who can develop, maintain or enhance public health and senior services to the citizens of Missouri.

Healthy Infants and Children - *Overview*

Key points

- ***The health of infants and children predicts their health as adults.***
- ***Maternal health behaviors and health status affect infant survival and childhood development.***
- ***Vaccine-preventable diseases and exposure to environmental toxins have many social and economic costs.***
- ***Disease prevention and health promotion are more cost effective early in life than treating disease and disability later.***

Why is the health of infants and children important?

The health of infants and children affects their growth and development, predicts their health as adults, and sets the stage for future generations.

The foundation for health begins during preconception and continues throughout the first years of life. Inadequate health care, unhealthy environments, and poor nutrition predispose children to health problems that may compromise growth and development or cause poor health later in life.

Maternal health behaviors and health status affect infant survival and childhood development. Babies born to inadequately nourished mothers are at increased risk for being premature, having low birth weight, being small for gestational age, and having birth defects. The use of tobacco, alcohol, and illicit drugs, during pregnancy increases the risk for pre-maturity, low birth weight, and infant death. Smoking during pregnancy doubles the risk of having a low birth weight baby.

Vaccines have reduced or eliminated many infectious diseases that once routinely killed or harmed many infants and children. However, the viruses and bacteria that cause vaccine-preventable diseases and deaths still exist and can be passed on to people who are not protected by vaccines. Vaccine-preventable diseases have many social and economic costs: sick children miss school and can cause parents to lose time from work. These diseases also result in doctor's visits, hospitalizations, and even premature deaths.

During childhood, the health habits and other behavior patterns that persist through life are developed.

- Healthy eating in childhood is important for proper growth and development and can prevent health problems such as obesity, dental caries, and iron deficiency anemia.
- Regular physical activity in childhood improves strength and endurance, helps build healthy bones and muscles, helps control weight, reduces anxiety and stress, increases self-esteem, and may improve blood pressure and cholesterol levels.
- Injuries are one of the leading causes of death and disabilities among infants and children. Many injuries can be prevented by changing the environment, individual behavior, products, social norms, legislation, or governmental and institutional policy.

Children today live in an environment that is vastly different from that of previous generations.

- Exposures to environmental toxins, such as lead, are now known to cause permanent damage to a child's nervous system. While all children are at potential risk of lead exposure, the risk is higher for low-income and minority children.
- Asthma can be triggered by environmental factors such as air pollution and smog, animal hair, dust mites, and cigarette smoke. The loss of breath and lung spasms, if not controlled, can be fatal.

Why is the health of infants and children a critical issue for Missouri?

The health of Missouri's infants and children sets the stage for the health of future generations. Health promotion and disease prevention are more cost effective early in life than treating disease and disability later in life.

Healthy Infants and Children — Overview

- ✓ Twenty percent or more of the incidence of low birth weight (LBW) and small for gestational age (SGA) can be attributed to cigarette smoking. A single percentage point decline in smoking prevalence among pregnant women would prevent 1,300 cases of LBW annually and save $21 million in direct medical costs nationwide.
- ✓ Total medical care expenditures for fully breastfed infants is about 20% lower than those for never-breastfed infants.
- ✓ In Missouri in 2001, 11.6% of children 2-5 years old enrolled in WIC were overweight. Fifteen percent of that same group were at risk for overweight. Sixty percent of overweight children have at least one cardiovascular disease risk factor, and 25% have two or more. Hospitalization rates, with their resultant costs, for complications of overweight in children and teenagers have tripled.
- ✓ Only 15% of Missouri children received a blood lead test during 2002. Of those, 5% had blood lead levels of ≥ 10 mcg/dl. In 1996, the cost of reducing high blood lead levels in children ranged from $522 to $5,200 depending upon the child's blood lead level and resultant medical need.
- ✓ In 2000, there were 1,755 emergency room visits by children ages 4 through 8 as a result of a motor vehicle crash. The charges for these emergency room visits (charges reflect 1,753 visits, charges for two of the visits were not reported) totaled $1,071,002.00. Medicaid paid for 22% of the emergency room costs ($230,422.00).

SUCCESS INDICATORS	Healthy People 2010	2000 Baseline	2001 Actual	2002 Actual	2003 Target	2004 Target	2005 Target
Percent of live births that result in healthy birth weight babies	N/A	90.3%	90.5%	90.7%	90%+	90%+	90%+
Immunization coverage rate for two-year olds	80.0%	79.0%	79.0%	73%	81.5%	83.0%	84.5%
Percent of children (WIC 2-5 years old) who are overweight (≥95th percentile for BMI for age)	N/A	11.5%	*11.6%	12.5%	11.5%	11.0%	10.8%
Percent of children (WIC 2-5 years old) who are at risk for overweight (85th to < 95th percentile for BMI for age)	N/A	15.4%	*15.0%	12.5%	15.0%	15.0%	15.0%
Percent of children 9-11 years old who are at a healthy weight	N/A	58.7%	57.0%	60.0%	60.0%	60.0%	60.0%
Rate of lead poisoning (levels greater than 10 micrograms/deciliter) in children less than 72 months of age	0 (total elimination)	10.0%	6.0%	5.0%	4.0%	3.0%	2.0%
Rate of hospital emergency department visits for asthma for children aged 1-4	8.0/1,000 population	16.2/ 1,000 pop.	16.4	Avail Nov or Dec. 03	14.1	13.4	12.7
Rate of falls among infants and children that result in ER visits/hospitalizations (rate of fall-related injuries per 100,000)	NA	4061.1	4008.5	3956.0	3903.4	3850.9	3798.3
Rate of deaths among infants and children resulting from motor vehicle accidents (rate of motor vehicle deaths per 100,000)	NA	6.0	4.0	4.8	4.5	4.4	4.2

* In 2001, the data represents only one record per person. In previous years, all records submitted to CDC were included.

Success Indicator:

- **Percent of live births that result in healthy birth weight babies**

What are the trends and how does Missouri compare to others?

Low birth weight is defined by CDC as weighing less than 2,500 grams or less than 5 lbs. 9 oz. at birth. Low birth weight is the most important factor affecting neonatal mortality and is a determinant of post neonatal mortality.

The Pregnancy Nutrition Surveillance System (PNSS) was established in 1979 by the Division of Maternal and Child Health, Centers for Disease Control and Prevention (CDC). Missouri has used PNSS since 1989 to monitor behavioral and nutritional risk factors among low-income pregnant women enrolled in public health programs such as the Special Supplemental Nutrition Program for Women, Infants and Children (WIC). Out of the 39,427 examined records in the 2001 Missouri PNSS, 8.8% of the infants had low birth weight.

Of all women giving birth in 2001:
- 41% participated in WIC
- 44% were Medicaid-eligible.

Percent of Live Births that Result in Healthy Weight Babies

	1995	1996	1997	1998	1999	2000	2001
Missouri Rate	90.1%	90.2%	90.2%	90.0%	90.2%	90.3%	90.5%
United States Rate	90.3%	90.3%	90.2%	90.2%	90.1%	90.2	NA

Source: Missouri Department of Health and Senior Services, Missouri Information for Community Assessment (MICA).

Percent of Live WIC Births that Result in Healthy Birth Weight Babies

	1995	1996	1997	1998	1999	2000	2001
Missouri WIC Rate	85.6%	85.7%	85.9%	85.7%	86.0%	86.5%	86.5%
United States WIC Rate	89.0%	88.6%	88.1%	88.3%	88.9%	NA	88.7%

Source: Pregnancy Nutrition Surveillance System.

Interventions that work:

Maternal - Child Home Visiting

Currently there are three maternal-child health home visiting models funded by the Department of Health and Senior Services.

The first is an evidence-based program - the Prenatal and Early Childhood Nurse Home Visiting Program based on the David Olds Model of home visiting. The model is a prevention program that helps low-income, first-time mothers deliver healthy babies, obtain proper care, and avoid substance abuse and criminal behavior. In this program nurse home visitors work with women and their families in their homes during pregnancy and the first two years of life to improve pregnancy outcomes, improve child health and development, and improve the family's economic self-sufficiency. The major problems targeted for prevention are:

- Preterm delivery and low birth weight
- Child abuse and neglect
- Childhood injuries
- Rapid, successive unintended pregnancies
- Reduced participation in the workforce
- Conduct disorder
- Crime and delinquency.

The second, the Missouri Community-Based Home Visiting Program, is an interdisciplinary team intervention to provide family support through collaboration and research. The model utilizes nurses and paraprofessionals and provides intensive sustained visits and coordination of community services over a long period of time (2-5 years) with a small number of families. Goals for the programs are to increase healthy pregnancies and positive birth outcomes, as well as decrease child abuse and neglect through home based services, which provide assessments, education, referrals, and case management for Missouri families most at risk.

A crisis intervention home visiting program is the third model. The goal of the program is to promote healthy babies and to prevent child abuse and neglect through home-based services, which provide assessments, education, referrals, and case management for Missouri families most at risk. The program utilizes perinatal registered nurses who provide services for indigent families in Missouri including pregnant women, families with new infants, families with "medically fragile" infants, families with special needs infants, pregnant teens, teens with infants, and/or mentally challenged/developmentally delayed or mentally ill pregnant women and their infants.

DHSS Strategy for Supporting the Interventions

1. Evaluate the effectiveness of the home visiting programs currently in use in Missouri and expand those determined to be most effective to targeted areas with identified high risk populations.

Interventions that work:

Supplemental Nutrition Program for Women, Infants, and Children (WIC)

The WIC Program provides nutritious foods to supplement the diets of pregnant women, new mothers, infants, and children up to five years of age based on eligibility (nutritionally-related medical risk and income). It provides nutrition counseling, access to health services, and food to low-income women, infants, and children.

The following benefits are provided to WIC participants:

- Health screening and risk assessment
- Nutrition education and counseling at WIC clinics
- Breastfeeding promotion and support
- Referrals to other services specific to individual needs, such as health care providers and social services agencies, for immunizations, lead testing, and other needs
- Food instruments (checks) for supplemental nutritious food prescriptions

WIC is a federally funded non-entitlement program. In 2001, WIC served 40.5% of all infants born in Missouri.

The WIC target populations are low-income and nutritionally at risk:

- Pregnant women (through pregnancy and up to 6 weeks after birth or after pregnancy ends).
- Breastfeeding women (up to infant's 1st birthday)
- Non-breastfeeding postpartum women (up to 6 months after the birth of an infant or after pregnancy ends)
- Infants (up to 1st birthday)
- Children (up to their 5th birthday)

Targeted health risks include: low hematology, inappropriate growth patterns, inappropriate eating behaviors, and factors which affect pregnancy outcomes.

According to a 1997 study, participation in WIC resulted in 55 cents saved in Medicaid costs for every dollar spent on WIC, when prenatal costs before birth were included. When prenatal costs before birth were excluded, the resulting savings was $1.82 of Medicaid funds for every dollar spent on WIC.

DHSS Strategies for Supporting the Interventions

1. Develop, implement and evaluate WIC program policies, procedures addressing prenatal weight, maternal weight gain, and multi-fetal gestation

2. Increase the benefit that women receive from the WIC Program by increasing the number of women who redeem their food instruments

Interventions that work:

Breastfeeding Outreach and Support

Integrating culturally appropriate breastfeeding curriculum into the training received by physicians, nurses, and dietitians is instrumental in supporting breastfeeding families during the prenatal and postpartum periods. In addition, the training provided enables physicians, nurses, and dietitians to address breastfeeding issues with women of childbearing age during routine examinations and visits. Evidence-based feeding practices in delivery hospitals during the critical early days of an infant's life ensure that breastfeeding is successfully initiated prior to sending the mother and baby home. Continued support by well-trained health care professionals, peers, and family members is also essential during the entire breastfeeding period.

Limited studies indicate that the breastfeeding peer counselor program is effective in increasing breastfeeding initiation in specific populations, such as African-Americans and teens.

In Missouri in 2001, black children had the lowest percent of ever being breastfed:

- Missouri black children — 35.3%
- Missouri children — 47.3%
- National rate — 50.9%

Peer counselors provide information and support to pregnant women and new mothers who are considering breastfeeding or who have chosen to breastfeed. Peer counselors, who have previously breastfed, generally come from the same socio-economic background as the women they are counseling. Peer counselors receive 20 hours of training prior to working with pregnant or breastfeeding women. While studies indicate that the infant's father and grandmothers are very influential in the decision of the family to breastfeed, there are no known interventions targeting fathers and grandmothers that have been evaluated for effectiveness.

In addition to the specific efforts made for initiating breastfeeding in the hospital and support upon returning home, public awareness of the benefits of breastfeeding is necessary. Women are more likely to breastfeed longer if their efforts are supported by their work place, public policies, and community attitudes regarding "normal" infant feeding.

DHSS Strategies for Supporting the Interventions

1. Improve health care practices through implementation of lactation curriculum in medical and nursing schools.
2. Compare and evaluate the educational approaches used to promote and support breastfeeding in Missouri's programs, such as maternal-child home visiting and WIC to determine their relative effectiveness.
3. Develop and implement a pilot intervention to increase breastfeeding knowledge and support by family members who influence the woman's decision to breastfeed, such as partners and mothers.

Success Indicator:

- **Rate of immunization for two-year olds**

What are the trends?

The statewide immunization rate for children 19-35 months has improved by thirteen percentage points from 64% in 1994 to 77.7% in 2002 for the 4:3:1 series of shots. This improvement has resulted in the highest immunization rate in the history of the state.

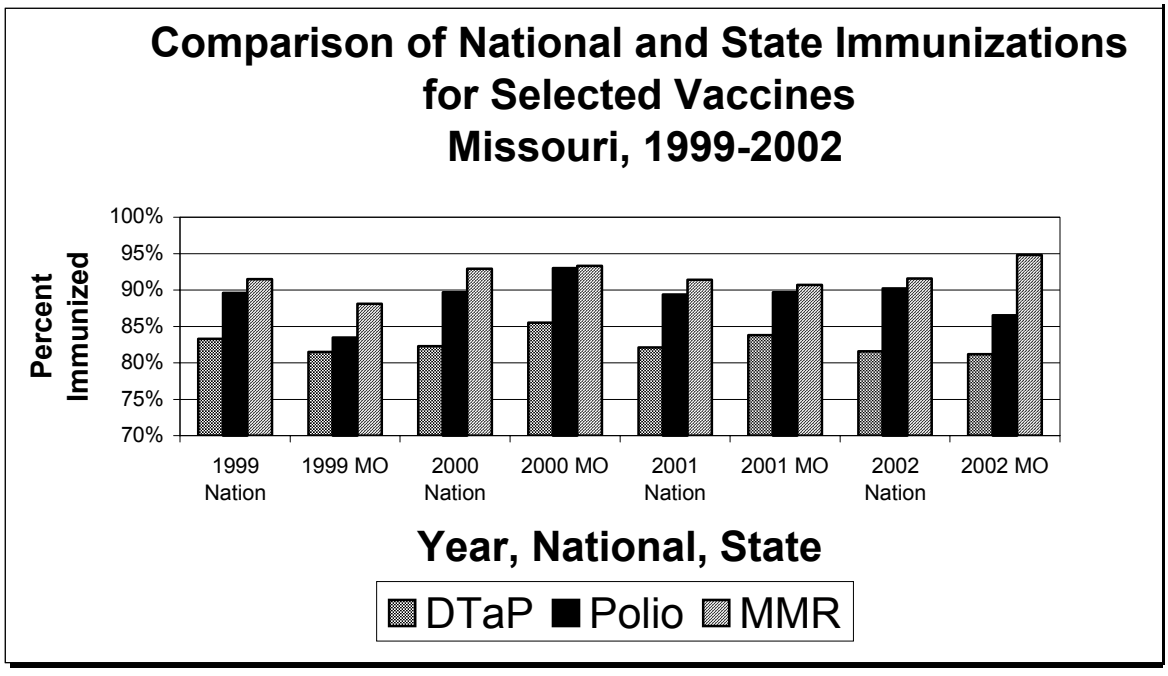
How does Missouri compare to others?

Using the Centers for Disease Control and Prevention's (CDC) National Immunization Survey (NIS), Missouri immunization rates can be compared national immunization levels.

In Missouri polio immunization was at 76% in 1994 and increased to 86.5% in 2002.

Rates of (DTaP) (diphtheria, tetanus & pertussis) vaccine have improved over the national rate.

MMR (measles, mumps, rubella) immunization in Missouri has increased to slightly ahead of the national rate.



Interventions that work:

Assessment and Feedback for Vaccination Providers, Provider Reminder/Recall, Client Reminder/ Recall)

A multi-component, evidence-based intervention that includes education (Assessment and Feedback for Vaccination Providers, Provider Reminder/Recall, Client Reminder/Recall) has been shown to be effective in increasing the demand for vaccination and enhancing access and quality of vaccination services.

Community-wide education should be aimed at improving the availability of information regarding vaccinations and increasing knowledge, acceptance and demand for vaccinations among clients, thereby changing behavior.

Provider assessment and feedback involves retrospectively evaluating the performance of providers in delivering one or more vaccinations to a client population and reporting this information back to the providers.

Reminders and recalls allow clients to know when vaccinations are due (reminders) or overdue (recall), as well as when to contact their vaccination provider to determine if vaccinations are needed. Provider reminder and recall systems make information regarding the client's immunization status available to providers manually or through a computerized system.

DHSS Strategies for Supporting the Interventions

1. Assist private providers in conducting clinic assessments to determine an immunization rate for their practice.
2. Promote reminder and recall activities for public providers and encourage private providers to implement reminder and recall activities.

Success Indicators:

- Percent of children who are overweight or at risk for being overweight

What are the trends?

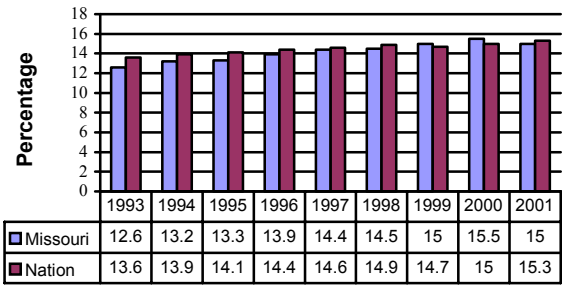
From 1993 to 2001, the Missouri data for children in WIC who are overweight (≥95th percentile for BMI for age), and those at risk for being overweight, follows the same slight upward trend as the national data.

How does Missouri compare to others?

The Missouri data follows the same slight upward trend for overweight as the national data.

Also, the data shows —

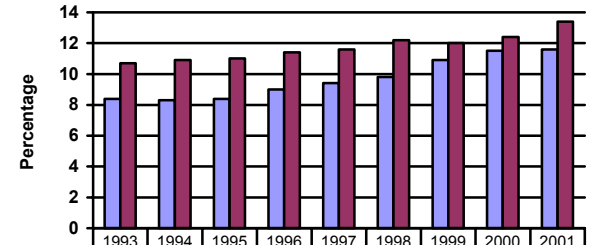
Missouri Children in WIC Aged 2 to < 5 Years Who Are At-Risk for Overweight



	1993	1994	1995	1996	1997	1998	1999	2000	2001
Missouri	12.6	13.2	13.3	13.9	14.4	14.5	15	15.5	15
Nation	13.6	13.9	14.1	14.4	14.6	14.9	14.7	15	15.3

Source: CDC Pediatric Nutrition Surveillance System

Children in WIC Aged 2 to < 5 Years Who Are Overweight
Missouri and National Trends



	1993	1994	1995	1996	1997	1998	1999	2000	2001
Missouri	8.4	8.3	8.4	9	9.4	9.8	10.9	11.5	11.6
Nation	10.7	10.9	11	11.4	11.6	12.2	12	12.4	13.4

Source: CDC Pediatric Nutrition Surveillance System

Interventions that work:

Community Policy and Environmental Change to Support Good Nutrition and Physical Activity

Building strong social supports in community settings through good nutrition and places for physical activity combined with informational outreach activities is necessary to support good nutrition and physical activity. The first step to ensuring that community policies and environments support good nutrition and physical activity is an assessment of the community's policies and environments.

- Access to food choices of high nutritional quality can be improved by providing milk, juice, and fresh fruit in vending machines.
- Access to places for physical activity can be improved by building or enhancing existing trails, sidewalks, or facilities.
- Good nutrition and physical activity can also be incorporated into the structured areas of the community, such as childcare facilities and schools.
- Communities need to provide programs that allow infants and young children to be physically active safely and to ensure affordable, skilled childcare providers who promote good nutrition and physical activity for infants and young children.

The CDC coordinated school health program includes components for a healthy school environment; planned, sequential health education; physical education; nutrition services; health services; counseling, psychological, and social services; health promotion for staff; and family and community involvement. The school health program should be implemented in elementary schools. In addition, the tool kit "Changing the Scene" developed by the United States Department of Agriculture (USDA) is an excellent resource for communities to use to improve the nutritional environment of schools.

For more description of the Coordinated School Health Program and "Changing the Scene" see Adolescent Health: *Health Risk Behaviors* and *Healthy Weight.*

DHSS Strategies for Supporting the Interventions

1. Support community initiatives and evaluate programs that promote healthy eating and physical activity.

2. Recommend and support improvement in the nutritional environments of schools through the use of the CDC School Health Index and the "Changing the Scene" toolkit.

4. Identify evidence– or science-based programs or interventions and the barriers in implementation through a report generated by the Missouri Council on the Prevention and Management of Overweight and Obesity that can be implemented to prevent or manage overweight in children.

4. Provide implementation recommendations to the state through the Missouri Council on the Prevention and Management of Overweight and Obesity.

Success Indicators:

- Rate of lead poisoning (levels greater than or equal to 10 micrograms/deciliter) in children less than 72 months of age

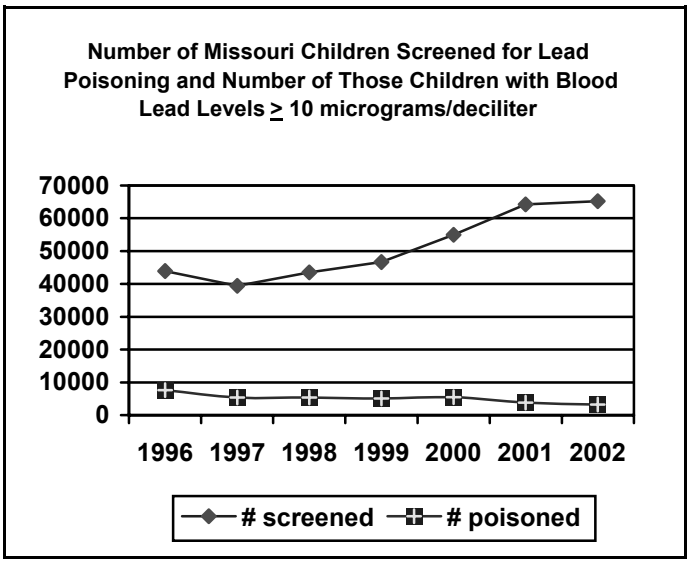
What are the trends?

Risk factors for childhood lead poisoning include, among other things, living in older housing with lead-based paint, lower socio-economic status, and living in homes undergoing remodeling. Missouri also has a vast history of lead mining. At one time, Missouri was the dominant producer of lead in the world. Waste still existing from the mining, milling and smelting of Missouri lead has been linked to increased exposure risks for children living in the former mining areas.

The trend of childhood lead poisoning in Missouri mirrors the trend seen nationally. Rates of lead poisoning are decreasing. Overall, the data shows:

- Decrease in the childhood lead poisoning prevalence rate from 17% in 1996 to 5% in 2002.
- Compared to 1996, approximately 20,000 more children were screened in 2002.

Those children most at risk of lead poisoning have always been the focus of screening. By screening more children since 1996, it is likely that populations less at risk are also being reached. The increase in screening appears to be a contributing factor in the decrease in childhood lead poisoning.

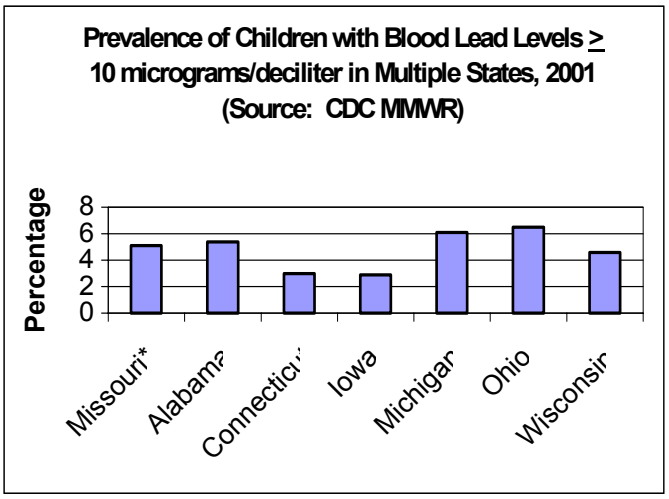


Source: Missouri Department of Health and Senior Services blood lead testing data.

How does Missouri compare to others?

Missouri has a slightly higher rate than the national rate (approximately 4% in 2001).

According to 2001 data from the Centers for Disease Control and Prevention, Alabama and Wisconsin have childhood lead poisoning prevalence rates similar to Missouri's, while the rate in Michigan and Ohio is slightly higher. Connecticut and Iowa have lower rates.



*This data is from the Centers for Disease Control and Prevention (CDC) and is calculated using CDC's definition of a confirmed blood lead level, which is slightly different than the definition DHSS uses.

Interventions that work:

Case Management of Children with Elevated Blood Lead Levels

Children identified with elevated blood lead levels should be evaluated and treated in accordance with Centers for Disease Control and Prevention (CDC) guidelines for follow-up care, including care coordination and public health, medical, and environmental management. Case management should include management of both the medical condition and the environment. For infants and children, the main source of lead exposure is chewing on or swallowing dust from items containing lead such as mini-blinds, lead painted woodwork, furniture, and toys.

Few children will have elevated blood lead levels high enough to warrant intensive medical treatment. However, all children with elevated blood lead levels will need some type of follow-up services. Examples of follow-up services include: more frequent blood testing, environmental investigation, case management and lead hazard control. The case manager assures that the family is educated about the importance of hygiene, nutrition, and ways to reduce lead hazards in their environment.

Medical care includes obtaining a detailed health history, assessment of signs and symptoms of lead exposure and toxicity, and nutritional evaluation. In addition to the screening test, this information allows the health care provider to initiate appropriate care planning and referral.

DHSS Strategies for Supporting the Interventions

1. Implement and evaluate the statewide plan for childhood blood lead level screening that addresses both universal and targeted screenings.

2. Ensure environmental assessments are conducted to identify hazards that are affecting the health of the child and recommend ways to reduce or eliminate hazards.

Success Indicators:

- Rate of hospital emergency department visits for asthma for children aged 5-14

What are the trends?

Asthma is the most common chronic disease of childhood and a leading cause of disability among children according to the Centers for Disease Control and Prevention. Overall, in the United States, asthma prevalence among persons aged 0-17 years increased approximately 5% each year during 1980-1995.

The Behavioral Risk Factor Surveillance System reported that of Missouri adults with children under the age of 18 in the household:

- 18.3% reported having at least one asthmatic child in 2001
- 16.3% of White, Non-Hispanic Missouri adults reported having at least one child in their household with asthma
- 35.3% of Black, Non-Hispanic Missouri adults reported having at least one child in their household with asthma
- 23.8% of Hispanic Missouri adults reported having at least one child with asthma in their household.

(Note: The estimated prevalence in childhood asthmas is reported by an adult respondent and does not necessarily reflect a clinical diagnosis.)

Missouri school nurses were surveyed in 1998 and 2003 to determine the number of children with special health care needs . The 2003 survey indicated that approximately 7.8% of school age children had asthma. (Note: The 2003 survey was completed by 70% of the school districts in Missouri. The responding school districts account for 70.4% of school age children attending public schools in Missouri.)

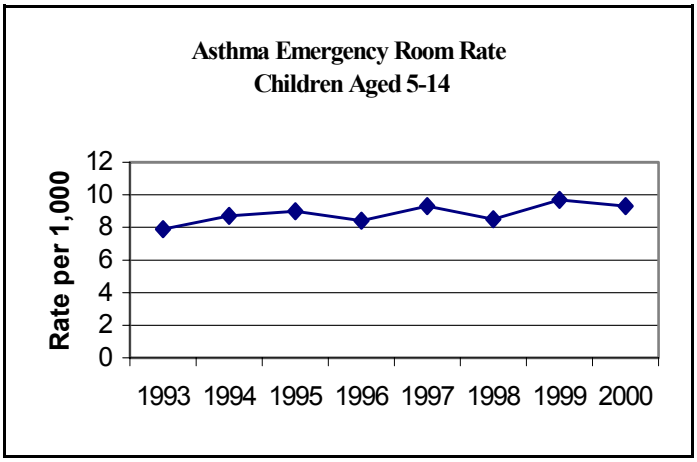
Special Health Care Needs Survey – Public School Nurses

Year	Number of Students in Schools Surveyed	Number of Students Reported to have Asthma	Percent of Students with Asthma
1998	538,437	31,647	5.9%
2003	629,877	48,983	7.8%

Source: MO DHSS, Division of Community Health, School Age Health Services Program

Trends in asthma in Missouri were analyzed using data of emergency room usage and hospitalization rates for the years 1993-2000. The results of the analysis are as follows:

- Asthma inpatient hospitalization rate has declined over the eight years
- Rate of emergency room rates has increased.
- Emergency room rates have remained relatively flat for the last five years.
- The changes in rates for the period from 1996 to 2000 are not statistically significant.



Source: Missouri Department of Health and Senior Services, Missouri Information for Community Assessment (MICA), Center for Health Information Management and Evaluation.

Interventions that work:

Coordinated Services for Asthma Prevention and Control

All children and their families need access to continuous, comprehensive, coordinated, community-based care that is family centered, compassionate, and culturally competent. These elements of care are particularly critical to the optimal growth and development of children with special medical needs, especially those with asthma.

Every child should have a medical home. A medical home, as described by the American Academy of Pediatrics (AAP), has the following attributes: the provision of preventive care; the assurance of ambulatory and inpatient care, 24 hours a day; strategies and mechanisms to ensure continuity of care (from infancy through adolescence); identification of and medically appropriate use of subspecialty consultation and referrals; interaction with school and community agencies; and maintenance of a central record and database containing all pertinent medical information, including hospitalizations.

Specifically for asthma, comprehensive care should include:

- Coordinated school health services for students with asthma which includes case management by a registered professional school nurse: written asthma action care plans; asthma education and awareness programs for students and school staff; safe enjoyable physical education and activity opportunities; and environmental policies that promote indoor air quality and enhances school, family and community coordination.
- Community-oriented health promotion programs that target asthma-preventable risk factors (second hand smoking, reduction of home allergens), school health, church-based, or community-based health promotion, including media campaigns to inform and increase awareness about asthma and preventability of complications.
- Physician educational programs to encourage the use of clinical practice guidelines.
- A regional consortium to coordinate and implement these strategies. The consortiums involve patients and their family, health care providers, public health sector representatives, and representatives of the community with potential impact on asthma prevention (e.g., industries, traffic authorities, urban development agencies, etc.).

DHSS Strategy for Supporting the Interventions

1. Use funding received from Centers for Disease Control and Prevention grant (2001-2004) to complete the statewide asthma plan and build capacity for implementation.

Success Indicators:

- Rate of falls among infants and children that result in emergency room visits/hospitalizations
- Rate of deaths among infants and children resulting from motor vehicle crashes

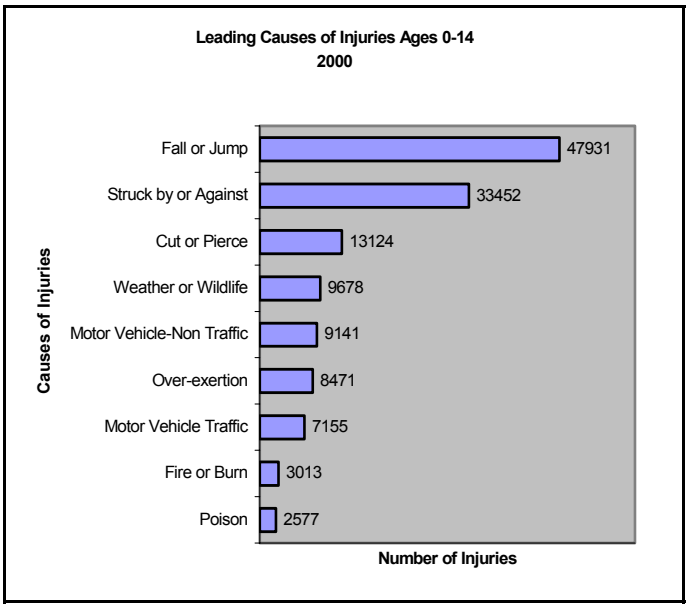
What are the trends?

Falls are the leading cause of injury among children. It's a surprising fact to many people who aren't aware of just how many different ways children are injured from falls. They can fall from windows, down stairs, off furniture, from bikes, and outdoor play equipment.

Every three minutes a Missouri child under the age of 15 seeks treatment in the emergency room or hospital as a result of a fall. In 2000, there were 47,931 fall-related injuries that required an admission to an emergency room or an inpatient hospital unit.

The rate of falls that result in injuries are highest among the 1-4 age group at 5,775.1 per 100,000 children compared to 3,531.5 for children ages 5-14 and 3,094.5 for children under 1 year of age. Boys are more likely to be injured than girls across the three age groups. Boys ages 1-4 have the highest rate at 6,536.5 per 100,000.

Motor vehicle related injuries kill more children than any other single cause in Missouri. Children ages 1-14 are more than twice as likely to die from a motor vehicle crash (63) than the next leading cause of death, malignant neoplasms (28).



Source: MO DHSS, Center for Health Information & Evaluation (CHIME) — Injury MICA

Injury Prevention Rates
(Missouri, Ages 0-14)

	1996	1997	1998	1999	2000	2001
Rate of Motor Vehicle Deaths per 100,000	N/A	6.1	6.4	5.0	6.0	4.0
Rate of Fall-Related Injuries per 100,000	3897.5	3741.9	3882.9	3940.3	4061.1	4220.0

Source: MO DHSS, Falls—CHIME Injury MICA, MV Deaths —CHIME Death MICA

Interventions that work:

Distribution and Education Programs and Ordinances Promoting the Use of Child Safety Seats

The Task Force on Community Prevention Services strongly recommends distribution and education programs for child safety seats. Distribution programs provide free loaner child safety seats, low-cost rentals, or direct giveaways. The task force also recommends delivery of community-wide information and enforcement campaigns in addition to incentive and educational programs for the use of child safety seats.

Child safety seat laws have been proven to increase child safety seat use by 13 percent. Fatalities are reduced by 35 percent and all fatal and non-fatal injuries are reduced by 17.3%.

Safety Education Programs

The most effective tool for preventing children's falls from windows is a window guard. Gates on stairways help prevent young children's falls, which are frequent. Pediatricians, public health nurses, and home visiting nurses can educate parents on fall prevention and installation of safety devices.

DHSS Strategies for Supporting the Interventions

1. Develop distribution and education programs regarding child safety seats, such as SAFE KIDS BUCKLE UP.
2. Develop community-wide information and enforcement campaigns that include educational workshops about properly fitting and safe installation of child safety seats, car seat inspection and stepped up enforcement of child safety seat laws.
3. Educate the public about fall prevention and use of safety devices within the home.

Healthy Adolescents - Overview

Key points

- ***Healthy adolescents = healthier adults.***
- ***Adolescent health and success in school are closely related.***
- ***Adolescent health problems result in great personal, social and monetary costs.***

Why is adolescent health important?

Adolescence — the transition from childhood to adulthood—is one of the most dynamic stages of human development. It is a time of marked physical, emotional, and intellectual changes, as well as changes in social roles, relationships and expectations.

Adolescents are not just teenagers. The age range of adolescence includes 11-21 year-olds and includes three developmental stages: early adolescence (11-14 years of age), middle adolescence (15-17 years of age), and late adolescence (18-21 years of age). These developmental stages are important to consider when planning interventions and programs to meet health-related needs of adolescents.

- Adolescent health provides the foundation for adult health status. Life-long patterns of healthy behaviors are established at this time.
- Unhealthy adolescent behaviors can become long-term risk factors for chronic health conditions in adulthood.

Youth who have problems with schoolwork are more likely than others to be involved in multiple health and safety risks. Health and education are closely related; school failure needs to be viewed as a health and educational crisis.

When students are healthy, they are better learners and more likely to succeed in school.

Why is adolescent health a critical issue for Missouri?

Adolescent health problems result in great personal, social, and monetary costs.

- **Motor vehicle crashes are the leading cause of injury and death for adolescents.**
  - ✓ Missouri adolescent deaths on roadways exceeded the national rate in the years 1995-1999.
- **Preventing adolescents from smoking saves lives and taxpayer dollars.**
  - ✓ If the current smoking rate continues, 139,484 of today's Missouri youth will die from tobacco-related illnesses.
  - ✓ Missouri's share of smoking-related Medicaid expenditures rose from $80.7 million in 1993 to $182.1 million in 2001.
  - ✓ The overall cost of tobacco use to Missourians is $1.7 billion annually for direct health care and $2.2 billion in lost productivity.
- **The prevalence of overweight children and adolescents has more than tripled in the past two decades**.
  - ✓ During that time, annual hospital costs for obesity-related conditions in youths aged 6-17 increased by $92 million (in 2001 dollars).
  - ✓ A 1999-2000 assessment of 20,000 Missouri 5th and 9th graders found that nearly 40% were already overweight or at risk for being overweight.
- **Teen pregnancy has serious consequences for teen parents, their children and society.**
  - ✓ Teen childbearing costs taxpayers at least $7 billion each year in direct costs associated with health care, foster care, criminal justice, and public assistance, as well as lost tax revenues.

There is no single solution to address the complexity of adolescent health needs and issues. The most promising strategies include prevention, intervention and health promotion efforts at places where young people's behavior can be influenced. Family and home, social relationships and school, neighborhood and community, all influence the health and well- being of youth.

Adolescents benefit from supportive environments and are less likely to engage in risk behaviors if they:

- ✓ have a sense of physical, emotional, and economic security
- ✓ have connections with caring adults and peers
- ✓ are able to make a contribution to the community and have input into decision-making
- ✓ believe that others have high expectations of them
- ✓ participate in engaging and challenging activities that build skills and competencies

Four Targeted Action Areas

The Missouri Department of Health and Senior Services, in collaboration with other state agencies and community partners across the state, will focus on four targeted action areas to improve the health of Missouri's adolescents. The four areas include:

1) Motor vehicle safety
2) Tobacco use prevention
3) Healthy weight
4) Teen pregnancy prevention

SUCCESS INDICATORS	Healthy People 2010	2000 Baseline	2001 Actual	2002 Actual	2003 Target	2004 Target	2005 Target
Rate of deaths to adolescents aged 15-24 caused by motor vehicle crashes per 100,000	N/A	41.4	35.9	41.0	37.1	36.8	36.5
Rate of injury to adolescents aged 15-24 caused by motor vehicle-traffic per 100,000	N/A	3182.6	3256.6	Avail Dec 04	3069.4	3042.6	3015.7
Percent of students grades 9-12 who smoked cigarettes on one or more of the past 30 days	16.0%	32.8%	30.3%	Avail Jan 04	30.3%	30.3%	30.3%
Percent of adolescents ages 9-11 who are at a healthy weight	N/A	58.1%	*57%	57.6%	59.0%	60%	60%
Percent of adolescents ages 12-17 who are at a healthy weight	N/A	58.7%	*52.1%	61%	60%	60%	60%
Rate of pregnancy among adolescents aged 15-17 per 1,000	46.0	32.5	29.2	27.7	26.3	24.3	22.4

* Data is from 2000—2001 school year.

Interventions that work:

Coordinated School Health Program Middle Schools/High Schools

Coordinated school health programs have been shown to effectively reduce the prevalence of health risk behaviors among young people.

The coordinated school health approach has proven especially effective in:

- promoting the prevention of health behaviors for chronic diseases including physical activity, healthy eating, and tobacco use prevention;
- prevention of intentional injuries, abuse of alcohol and other drugs, and prevention of pregnancy, HIV and other sexually transmitted diseases;
- improving students' access to needed health and mental health services.

A coordinated school health program addresses numerous adolescent health and developmental issues through a wide array of services. The eight components of the Centers for Disease Control and Prevention's (CDC) coordinated school health program includes:

1. Healthy School Environment
2. Health Education
3. Physical Education
4. Nutrition Services
5. Health Services
6. Counseling, Psychological, and Social Services
7. Health Promotion for Staff
8. Family/Community Involvement

Resources available to support coordinated school health programs:

School Health Index

The School Health Index is a self-assessment and planning guide developed by CDC to assist schools in assessing all eight of the components of the coordinated school health model. It is a self-assessment tool that a school can use to determine its own priorities for making improvements. Currently, the School Health Index addresses physical activity, healthy eating, and tobacco-free lifestyle. Future versions will address all six behaviors that account for the most serious illnesses and premature deaths, and will additionally include injury prevention, alcohol and other drugs, and sexual behavior. By using the School Health Index, schools voluntarily:

- Identify strengths and weaknesses of school health promotion policies and programs.
- Develop an action plan for improving the identified weaknesses and thus improving student health.
- Involve teachers, parents, students, and the community in improving school health services and programs.

DHSS Strategies for Supporting the Intervention

1. Provide technical assistance and funding to support components of the coordinated school health program.

2. Recommend and support implementation and evaluation of the CDC School Health Index statewide.

Success Indicators:

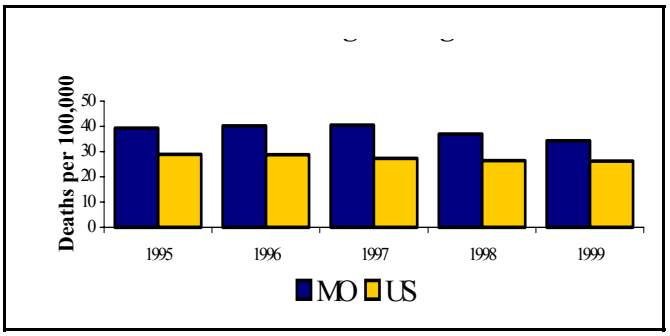
- Rate of motor vehicle related deaths
- Rate of motor vehicle related injuries

What are the trends?

Adolescent deaths that are a result of motor vehicle crashes have declined slightly during the period between 1995 and 1999. The rate of death decreased from 39.3 per 100,000 adolescents in 1995 to 34.3 in 1999.

- Adolescents die on roadways in greater proportion than other drivers.
- Motor vehicle crashes are the leading cause of death for adolescents and young adults 15 to 24 years of age.
- 13.6% of adolescent drivers ages 16 through 20 involved in a crash were not wearing a seat belt compared to 9.3% for drivers of all ages involved in a crash.

Motor Vehicle Traffic Related Deaths
Adolescents and Young Adults Ages 15-24



Source: *Vital Statistics*, Center for Health Information Management and Evaluation.

How does Missouri compare to others?

Missouri's rate for motor vehicle traffic related deaths exceeded the national rate each year of the same period. This is in spite of advances in roads and safety devices.

Interventions that work:

Interventions Designed to Increase the Use of Seat Belts

Much evidence exists to show the use of motor vehicle occupant seat belts decreases injuries and deaths in motor vehicle crashes. Enhanced enforcement programs, including increased citations for non-compliance with seat belt laws, and media campaigns have been shown to increase safety belt use by 17% and reduce fatal injuries by 7% to 15%.

Primary enforcement of safety belt laws for all occupants of motor vehicles allows law enforcement officers to stop and ticket drivers for not wearing seat belts. Seat belt usage can be the primary reason to stop drivers. A combination of primary enforcement, media campaigns, and public education has been proven to be effective in increasing seat belt use and reducing deaths. States with primary seat belt laws have usage rates of 10 to 15 percentage points higher than states with secondary seat belt laws.

The habit of using seatbelts begins before children reach adolescence. Model child passenger safety programs include:

- National Highway Traffic Safety Administration (NHTSA) Standardized Child Passenger Safety Training Program. The NHTSA program is the first national training program to address the needs of child passenger safety (CPS) professionals. The program was developed to provide quality control in course content and instructors to ensure that information and materials used are up-to-date, accurate, and consistent. The program ensures that CPS professionals, who are responsible for educating their communities on child passenger safety, have the most up-to-date training and information available. Certification is available through the American Automobile Association .

- "Mobilizing America to Buckle Up Children" is a basic training in child passenger safety enforcement for patrol officers. The program focuses on boosting overall enforcement of and compliance with child occupant protection laws, and increasing safety belt use among adults through routine traffic stops. Materials designed for Mobilizing America support many forms of training, from 10-15 minute self-instructional segments to a four hour instructor-led seminar.

DHSS Strategies for Supporting the Interventions

1. Strengthen enforcement of current seat belt law.
2. Encourage local and state policies/laws regarding seat belt usage.
3. Coordinate funding and programmatic efforts to promote seat belt usage.
4. Develop "toolkit" that includes core elements of a comprehensive approach for communities, including resources and funding opportunities.
5. Provide information, technical assistance and training to local communities to improve seat belt usage.

Success Indicators:

- Percent of Missouri students grades 9-12 who smoked a whole cigarette for the first time before age 13
- Percent of Missouri students grades 9-12 who smoked cigarettes on one or more of the past 30 days

What are the trends?

Smoking among students grades 9-12 declined over the five year period 1995 –1999. The 2001 Missouri Youth Risk Behavior Survey shows an increase in smoking since 1999. Missouri's percent of high school students who smoke exceeded the national rate for the period from 1995 to 2001.

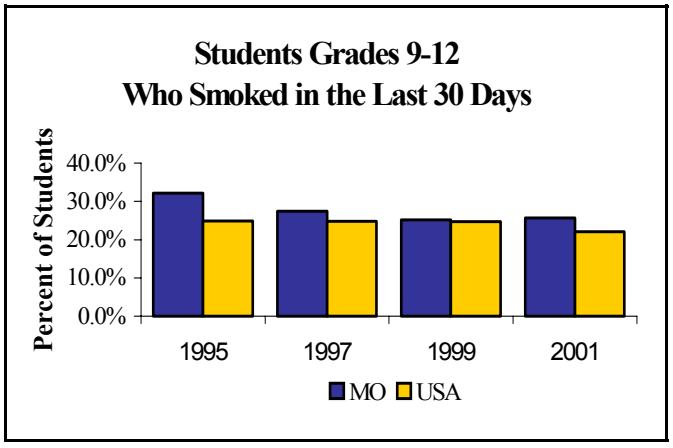
The percent of students who began smoking before age 13 followed a similar trend to the percent of students smoking. The percent of students who began smoking before age 13 also exceeded the national rate for the period from 1995-2001.

Preventing adolescents from smoking will save lives. Each year 10,300 Missourians die from tobacco-related illnesses. At the current rate of smoking among adolescents, 139,484 of today's youth in Missouri will die prematurely due to tobacco-related illnesses.

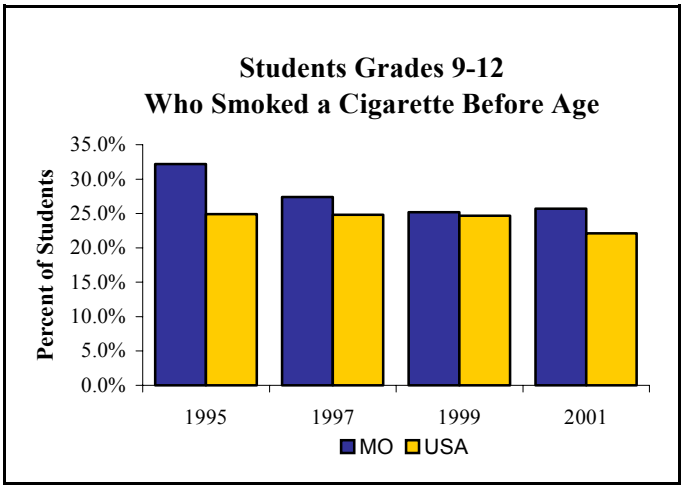
Tobacco use results in tremendous economic costs to Missouri. The state's share of Medicaid expenditures rose from $80.7 million in 1993 to $182.1 million in 2002 as a result of smoking.

The overall cost of tobacco use in Missouri is $1.7 billion annually for direct health care and $2.2 billion in lost productivity.

How does Missouri compare to others?



Source: Youth Risk Behavior Survey—Missouri & United States



Source: Youth Risk Behavior Survey—Missouri & United States

Interventions that work:

Comprehensive Tobacco Use Prevention Program

The Task Force on Community Preventive Services completed a thorough review of published tobacco control research and made recommendations for interventions that effectively reduced tobacco use and exposure to secondhand smoke.

Effective Interventions that form a comprehensive tobacco use prevention and cessation program include:

- Evidence-based community and school-based programs that encompass tobacco use prevention education and policy adoption to create tobacco-free environments.
- Affordable, accessible and effective cessation services.
- Media and counter-marketing to support local programs and promote cessation services.
- Statewide programs to support local efforts to reduce tobacco use and exposure to secondhand smoke.
- Increasing the price of tobacco products such as by increasing state excise taxes.
- Chronic disease programs for screening and early detection of tobacco-related diseases.
- Enforcement of state and local tobacco control laws and policies.
- Surveillance and evaluation systems to track tobacco use and progress in meeting program objectives.

These interventions as part of a **comprehensive tobacco use prevention and cessation program** can have significant impact on tobacco use. The combination of these efforts through a comprehensive tobacco use prevention program implemented in California during the early 1990's resulted in a 57 percent reduction in tobacco use while there was only a 27 percent reduction in the United States during the decade. There were also 33,000 fewer deaths due to heart disease in the state during this period.

How do we rate in Missouri in implementing these proven interventions?

- Missouri's tax on tobacco products is among the lowest in the country. At seventeen cents on each pack of cigarettes, it ranks sixth lowest among all states.
- Missouri's State Clean Indoor Air Law offers limited protection for nonsmokers because it allows designated smoking areas in workplaces and public places.
- Communities and workplaces in Missouri are working to provide increased protection for workers and the public by adopting policies and ordinances further restricting smoking indoors.
- Missouri ranks at the bottom of all states in state funding to support a comprehensive tobacco use prevention and cessation program.
- Through a strategic planning process with state and local tobacco use prevention partners, coordinated efforts to maximize use of the existing, limited resources have been undertaken.

DHSS Strategies for Supporting the Interventions

1. Provide information and technical support to communities and schools implementing tobacco prevention education and policy interventions.
2. Involve youth in programs to increase pro-health knowledge, beliefs and skills among young people to counter influences to use tobacco.
3. Secure funding for an evidence-based comprehensive tobacco use prevention and cessation program.
4. Support efforts to increase the state excise tax on tobacco products.

Success Indicators:

- Percent of school-age adolescents who are healthy weight
- Percent of adolescents who eat 5 or more servings of fruits and vegetables per day
- Percent of students who exercised or participated in physical activities for at least 20 minutes that made them sweat and breathe hard on three or more of the past seven days

What are the trends?

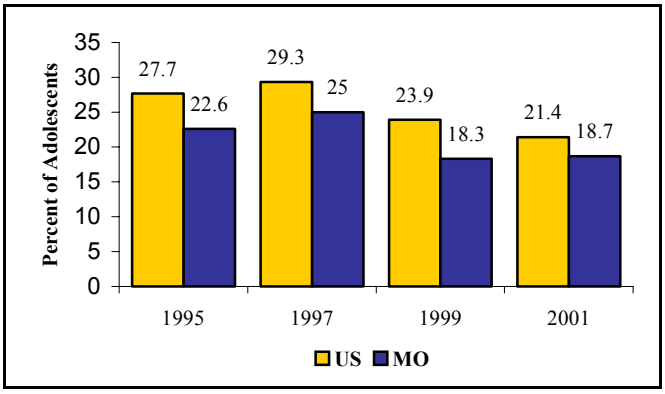
The prevalence of overweight children and adolescents has doubled since 1979. A 1999-2000 assessment of 20,000 Missouri fifth and ninth graders found that nearly 40% were already overweight or at risk for being overweight. Eighty percent of adolescents who are overweight go on to become obese adults.

Weight, exercise, and eating habits are not only related to physical health, but emotional and mental health as well. "Weight" is a very sensitive issue for some adolescents and their parents. Eating disorders (including anorexia, unhealthy weight loss and bulimia) are serious conditions that are being diagnosed in younger adolescents prior to high school. Eating disorders lead to medical and psychological problems that impair normal growth and development of teens. Another concern is the increased amount of "screen time" adolescents are spending watching television or surfing the internet instead of engaging in physical activity.

Maintaining healthy weight is best accomplished through healthy eating behaviors and regular physical activity. Physical activity and nutrition can affect adolescents' energy levels and influence growth and body composition. Physical activity can reduce anxiety and stress and increase self-esteem. Nutritious eating habits can positively impact problem-solving skills and academic achievement.

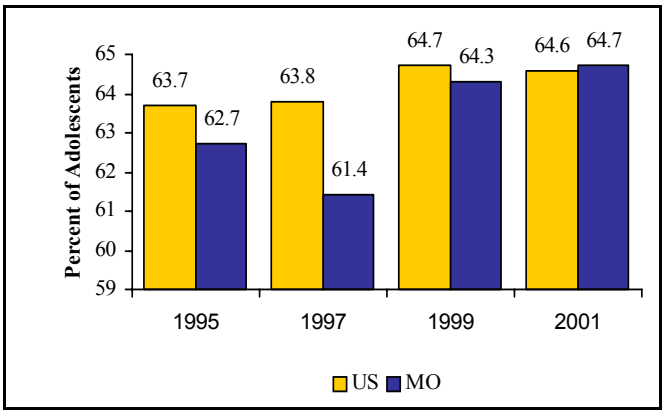
How does Missouri compare to others?

Adolescents Grades 9-12 Who Ate 5 or More Servings per Day of Fruits and Vegetables



Source: Youth Risk Behavior Survey—Missouri & United States

Adolescents Grades 9-12 Who Participated in Vigorous Activities



Source: Youth Risk Behavior Survey—Missouri & United States

Interventions that work:

Community Initiatives that Promote and Support Physical Activity and Nutrition Environments

The research strongly recommends social support interventions in community settings and the creation of (or enhanced access to) places for physical activity combined with informational outreach activities. Effective behavioral change interventions focus on activity behavior through building and maintaining supportive social networks. Access to places for physical activity can be created or enhanced by building or enhancing existing trails, sidewalks, or facilities.

One model initiative is Hearts N' Parks, a national, community-based program supported by a partnership between the National Heart, Lung, and Blood Institute (NHLBI) and the National Recreation and Park Association (NRPA). This innovative program aims to reduce the growing trend of obesity and risk of coronary heart disease by encouraging Americans of all ages to aim for healthy weight, follow a heart-healthy eating plan, and engage in regular physical activity. Hearts N' Parks activities can be incorporated into a variety of programs through recreation and park departments and other community organizations. Staff training and resources are provided to integrate heart-healthy activities into existing or new programs. Evaluation materials to measure the program's impact are also included. Missouri was designated by NHLBI and NRPA as one of ten states to serve as Magnet Centers for the expanded implementation of the Hearts N' Parks Program. Six parks and recreation departments in Missouri have agreed to participate; they include Des Peres, Jefferson City, Kansas City, Poplar Bluff, Rolla, and Springfield.

"Changing the Scene" Tool Kit

The United States Department of Agriculture (USDA) has developed a "Changing the Scene" tool kit to help communities improve the nutritional environment of schools. This tool was developed in collaboration with more than 20 national organizations, including the American Academy of Pediatrics, The American Dietetic Association, the United States Department of Education, and the CDC.

"Changing the Scene" includes definitions of success for six components:

- Commitment to Nutrition and Physical Activity
- Quality School Meals
- Other Healthy Options
- Pleasant Eating Experiences
- Nutrition Education
- Marketing

DHSS Strategy for Supporting the Intervention

1. Support expanded implementation of community initiatives and programs that promote physical activity and healthy eating.

Success Indicator:

- Rate of pregnancy among adolescents aged 15-17 per 1,000 population

What are the trends?

Missouri's pregnancy rate for adolescents ages 15-17 has steadily declined since 1995. The rate for 2000, 32.5, represents approximately a 25% decline from the 1995 rate of 42.0—but still more than 4,000 Missouri teenagers become pregnant each year.

Youth at greatest risk are more likely to live in areas with high poverty, low levels of education, high residential turnover, and high divorce rates. Other risk factors include school failure, drug and alcohol use, early sexual activity, low parental expectations for academics, and low connectedness with parents, other adults and school. Teen girls whose first partners are older teens or adult men are at increased risk for becoming pregnant.

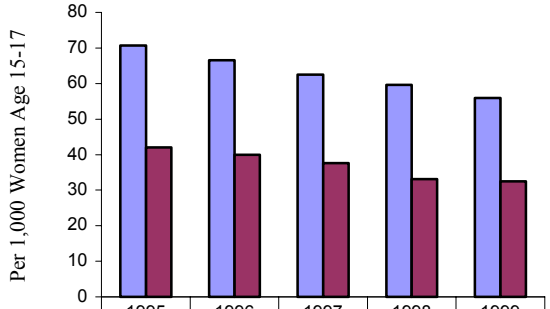
Not only does teen childbearing have serious consequences for teen parents, their children, and society, it also has important economic consequences.

- A cost -benefit analysis suggests that the government could spend up to eight times more than is currently being spent on teen pregnancy prevention and still break even.
- A study estimating the cost-effectiveness and cost-benefit of one particular curriculum found that for every dollar invested in the program, $2.65 in total medical and social costs were saved. The savings were produced by preventing pregnancy and sexually transmitted diseases (STDs).

How does Missouri compare to others?

While the teen pregnancy rates are at their lowest level in 20 years, the United States still has the highest rates of teen pregnancy among other countries in the industrialized world.

Pregnancy Rate for Adolescents Age 15-17 United States and Missouri



	1995	1996	1997	1998	1999
United States	70.7	66.6	62.5	59.6	55.9
Missouri	42	40	37.6	33.1	32.5

Source: *Vital Statistics*, Center for Health Information Management and Evaluation.

Interventions that work:

Programs That Promote Healthy Youth Development and Reduce Teen Pregnancy

Research strongly suggests that youth development programs that include service learning, promote healthy behavior, life skills development, and a sense of purpose can reduce teen pregnancy.

"Although the research does not clearly indicate why service learning is so successful, several possibilities seem plausible: participants develop relationships with program facilitators, they gain a sense of autonomy and feel more competent in their relationships with peers and adults, and they feel empowered by the knowledge that they can make a difference in the lives of others. All such factors, in turn, may help increase teenagers' motivation to avoid pregnancy. In addition, participating in supervised activities—especially after school—may simply reduce the opportunities teens have to engage in risky behavior, including unprotected sex."

One of more promising programs is the *Teen Outreach Program.*

The *Teen Outreach Program (TOP)* is a model youth development approach proven effective in increasing academic success, and preventing teen pregnancy and negative behavior among program participants. In an experimental evaluation of the program, high school students from 25 sites nationwide were randomly assigned to a *TOP* group or a control group. The program produced these outcomes:

- 11% lower rate of course failure;
- 14% lower rate of suspension;
- 33% lower rate of pregnancy; and
- 60% lower school dropout rate.

Results suggested the potential value of the *TOP* specifically, and also more generally of interventions that seek to prevent problem behaviors by addressing broad developmental tasks of adolescence rather than by focusing upon the individual problem behaviors. *TOP* is a nationally replicated program that gives communities a framework for cultivating a variety of strategies for local implementation. The *TOP* can be successfully implemented by schools, as well as by community and faith-based organizations that serve youth. The program is ideally suited to reach young people between the ages of 12-17.

The program has two main features: 1) curriculum-guided group discussions and 2) opportunities for young people to provide volunteer services designed to improve their communities. *TOP* sessions include a wide range of topics of interest to adolescents including friendships, relationships, sexuality education, and other issues. Each program is independently operated and focuses on the specific problems facing the particular community in which it is implemented.

Currently there are several *Teen Outreach Programs* successfully being implemented in Missouri.

DHSS Strategies for Supporting the Interventions

1. Establish and lead an interagency task force to identify and coordinate resources across agencies and organizations that promote healthy adolescent development and reduce teen pregnancy.
2. Provide information and technical assistance to enable counties and communities with higher than state teen pregnancy rates to implement youth development programs shown to reduce teen pregnancy.
3. Develop a plan to compare and evaluate promising programs designed to reduce teen pregnancy.

Healthy Adults - *Overview*

Key points

- ***Simple routines, such as regular physical activity, healthy eating habits, and avoiding tobacco use improves health.***
- ***Much of the illness, disability & death associated with aging is avoidable.***
- ***Early detection and care coordination of diseases/illness saves lives.***

Why is the health of adults important?

Poor health is not an inevitable consequence of aging. Although the risk of disease and disability increases with advancing age, much of the illness, disability, and death associated with chronic disease is avoidable through known prevention and care measures. Key measures include practicing a healthy lifestyle, the use of early detection practices and care coordination such as:

- regular physical activity
- healthy eating
- avoiding tobacco use
- responsible sexual behavior
- screening for breast, cervical, skin, and colorectal cancers, cardiovascular disease, diabetes and its complications, and depression
- increasing adoption of chronic care management in health care settings

Why is the health of adults a critical issue for Missouri?

- **Smoking**
  - ✓ Each day in Missouri, smoking causes more than 33 deaths.
  - ✓ In 2001, over one-fourth (25.9%) of Missouri adults smoked. Missouri's high smoking rates contribute to the state's ranking well above the U.S. average for such smoking-related health problems as heart disease, cancers, emphysema, and low birth weight infants.
  - ✓ Health care costs from tobacco use in Missouri account for over $1.7 billion annually. Approximately $415 million of this amount is in Medicaid costs.
  - ✓ In 2001, almost 40% of Missouri's adult workers were at risk of exposure to tobacco smoke in their work areas.
- **Overweight and Obesity**
  - ✓ Obesity is considered to be at epidemic proportions in Missouri.
  - ✓ In 2001, almost one-fourth (23.2%) of the adults in Missouri were obese.
- **Physical Inactivity**
  - ✓ In 2001, the prevalence of physical inactivity remained high at 27.5% among Missouri adults.
- **Nutrition**
  - ✓ In 2000, only 20.7% of Missouri adults reported eating 5 or more servings of fruits and vegetables per day.
  - ✓ Racial disparities regarding fruit and vegetable consumption are greater in Missouri than nationally. Nationally, 21.3% of African-American adults reported daily consumption of 5 fruits and vegetables while that number was only 14.9% for Missouri African-American adults.
- **Chronic Disease Care Management**
  - ✓ Poor care coordination for patients with chronic illnesses leads to conflicting treatment recommendations, adverse drug interactions and unnecessary hospitalizations and nursing home placements.

- ✓ Lack of continuous monitoring, follow-up and feedback to patients and providers allows critical warning signs to go undetected and untreated, leading to costly and preventable complications.

- **Sexually Transmitted Diseases**
  - ✓ In 2000, Missouri ranked 14th in the incidence rate of gonorrhea, 32nd in the rate of syphilis, and 24th in the rate of chlamydia in the nation.
  - ✓ Direct costs alone (inpatient and outpatient) equate to over $200 million for STDs within Missouri.

- **Tuberculosis**
  - ✓ Treatable, but not vaccine preventable, tuberculosis is one of the major diseases that have developed antibiotic drug resistant strains.

SUCCESS INDICATORS	Healthy People 2010	2000 Baseline	2001 Actual	2002 Actual	2003 Target	2004 Target	2005 Target
Percent of adult current smokers	12.0	27.2	25.9	26.5	25.7	25.6	25.4
Percent of women smoking during pregnancy	2.0	18.3	18.3	18.1	17.9	17.7	17.5
Percent of adults at risk of exposure to tobacco smoke at work	**	19.4	39.6	38.0	37.6	37.0	36.5
Prevalence of overweight (BMI 25-29.9 kg/m^2)	**	34.4	36.2	37.0	33.4	33.1	32.7
Prevalence of obesity (BMI>=30 kg/m^2)	15.0	22.1	23.2	23.2	21.5	21.3	21.0
Percent of adults who report no leisure time physical activity during past month	20.0	28.8	27.5	26.5	24.8	23.6	22.4
Prevalence of individuals consuming 5 or more fruits and vegetables daily	**	20.7	*	19.2	*	22.8	*
Number of organizations participating in Missouri's Chronic Disease Care Management initiative	**	*	*	10	25	50	100
Rate of sexually transmitted diseases (per 100,000)**:**							
Syphilis	0 (elimination)	0.5	0.5	1.4	1.4	1.3	1.2
Gonorrhea	119.0	162.5	155.9	160.0	120.8	110.0	100.0
Chlamydia	**	246.0	249.3	298.2	215.9	207.7	200.0
Rate of tuberculosis (per 100,000)	0 (elimination)	3.8	2.8	2.8	2.4	2.0	1.8

*Data not available **No comparable 2010 objective or uses different data source

Success Indicators:

- Prevalence of current smoking
- Prevalence of women smoking during pregnancy
- Prevalence of adults at risk for exposure to tobacco smoke at work

What are the trends?

The trend in prevalence of current cigarette smoking among Missouri adults has remained stable for more than a decade. In 1988, 26.2% of adults smoked compared to 26.5% in 2002. Smoking has also remained most prevalent among adults that have less than a high school education (37.3% in 2002). Among Missouri public high school students, cigarette smoking has declined somewhat over the past six years - from 39.8% in 1995 to 30.3% in 2001.

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How does Missouri compare to others?

Smoking prevalence among Missouri adults and youth is higher than that of their peers across the United States. Smoking among U.S. adults was 23% in 2002 and among U.S. high school students was 28.5%. It is also higher among adults in the neighboring states of Arkansas (26.3), Illinois (22.8), Iowa (23.2), Kansas (22.1) and Nebraska (22.7).

A strategy that has effectively reduced tobacco use is to increase the price of tobacco products, such as by raising the state's excise tax. It is estimated that for every 10% increase in the price of cigarettes, overall consumption will be reduced by approximately 4% among adults, and by 7% among young people and pregnant women. When compared to other states' excise tax on cigarettes, Missouri's tax of 17 cents per pack ranks among the six lowest in the country. Among border states, only Kentucky's 3 cents is less than Missouri.

Cents Per Pack Cigarette Excise (2002) in Missouri and Surrounding States

Illinois	Kansas	Nebraska	Iowa	Arkansas	Oklahoma	Tennessee	Missouri	Kentucky	United States
98	79	64	36	34	23	20	17	3	39

Source: Campaign for Tobacco-Free Kids. (2002). *State cigarette taxes rates & rank, date of last increase, annual pack sales & revenues, and related data.* www.tobaccofreekids.org

Interventions that work:

The Task Force on Community Preventive Services completed a thorough review of published tobacco control research and made recommendations for interventions that effectively reduced tobacco use and exposure to secondhand smoke. The recommended evidence-based strategies include:

- **Increasing the price of tobacco products such as by increasing excise taxes.** Studies following cigarette tax increases in California, Massachusetts and Oregon all showed significant declines in tobacco consumption.
- **Adopting policies prohibiting tobacco use in workplaces and public places.** These policies reduce exposure to secondhand smoke and also decrease tobacco use. A published study reported that if all workplaces in the United States were smoke-free, cigarette use would decrease by 4.5%. California, New York, Delaware and Connecticut have adopted laws banning smoking in all indoor workplaces, including restaurants and bars.
- **Counseling patients to quit tobacco use by health care providers** is highly effective. Additionally, health care systems prompting health care providers to counsel patients who smoke to quit is strongly recommended.
- **Providing telephone support (ouit-line) for tobacco users, particularly when combined with reduced cost pharmacologic treatments** (drug therapies) is highly effective in increasing quitting among adults.

These interventions as part of a **comprehensive tobacco use prevention and cessation program** can have a significant impact on tobacco use. The combination of these efforts through a comprehensive tobacco use prevention program implemented in California during the early 1990's resulted in a 57% reduction in tobacco use while there was only a 27% reduction in the United States during the decade. There were also 33,000 fewer deaths due to heart disease and lung and bronchial cancers were reduced by 14% during this period. In 2001, 17.2% of adults in California smoked cigarettes compared to 25.9% of Missouri adults.

Comprehensive Tobacco Use Prevention Program

Key components include:

- Evidence-based community and school programs that encompass tobacco use prevention education and policy adoption to create tobacco-free environments.
- Affordable, accessible and effective cessation services.
- Media and counter-marketing to support local programs and promote cessation services.
- Statewide programs to support local efforts to reduce tobacco use and exposure to secondhand smoke.
- Chronic disease programs for screening and early detection of tobacco-related diseases.
- Enforcement of state and local tobacco control laws and policies.
- Surveillance and evaluation systems to track tobacco use and progress in meeting program objectives.

Clean Indoor Air

Missouri's State Clean Indoor Air Law offers limited protection for nonsmokers because it allows designated smoking areas in workplaces and public places. Communities and workplaces in Missouri are working to provide increased protection for workers and the public by adopting policies and ordinances further restricting smoking indoors.

DHSS Strategies for Supporting the Intervention

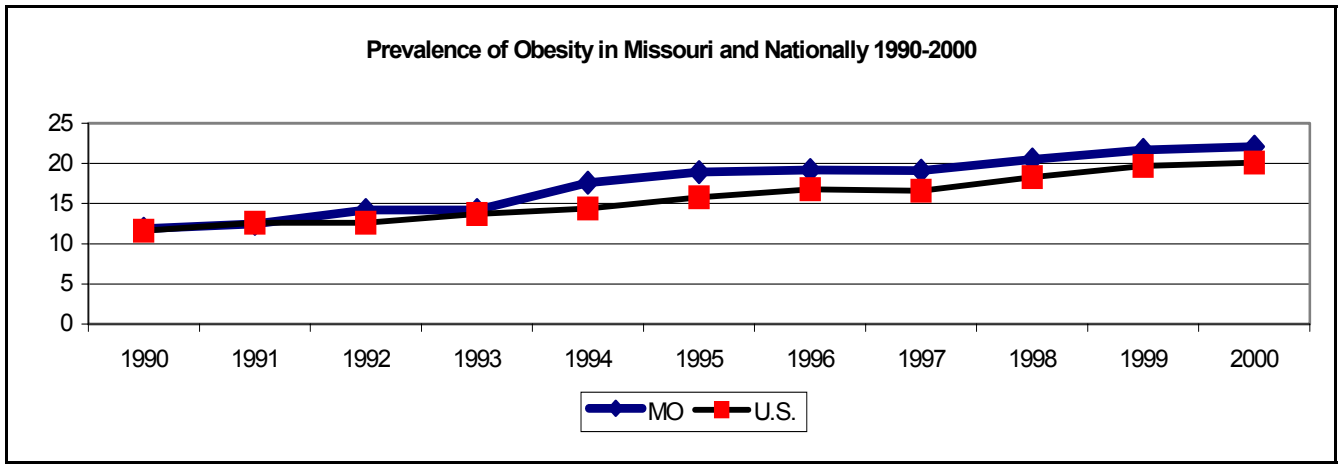
1. Support local efforts to reduce secondhand smoke in workplaces and public places.
2. Collaborate with health care provider systems to encourage counseling adult smokers to quit, particularly pregnant women.
3. Secure funding for an evidence-based comprehensive tobacco use prevention and cessation program.
4. Support efforts to increase the excise tax on tobacco products.

Success Indicator:

- Prevalence of overweight and obesity

What are the trends?

Obesity is considered to be at epidemic proportions in the United States, and Missouri is no exception. Obesity rates increased by 66% from 1990 to 2000. Overweight trends are stable for the U.S. and Missouri from 1990 to 2000.



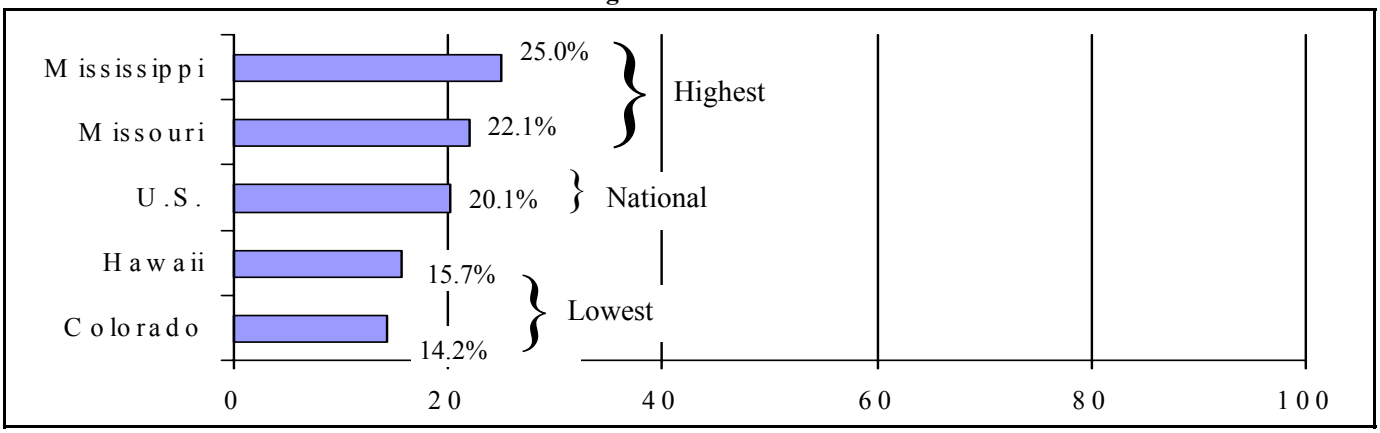
Source: BRFSS, 1990-2000

How does Missouri compare to others?

In 2000, Missouri ranked tenth in the prevalence of obesity in the United States and that prevalence continues to increase.

Nationally, as in Missouri, obesity disproportionately affects minorities -- the prevalence is 30.2% of non-Hispanic African American women and 28.4% of Mexican-American women.

Prevalence of Obesity Among States, Comparing Missouri to the National Prevalence and States with the Highest and Lowest Prevalence



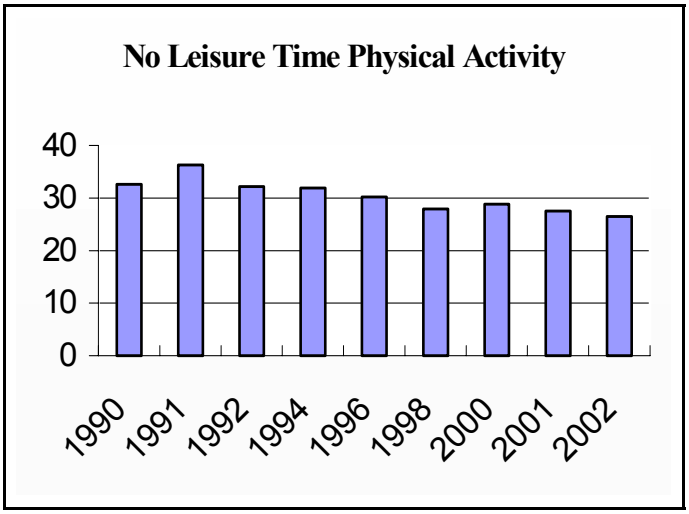
Source: Centers for Disease Control, 2000

Success Indicator:

- Prevalence of physical inactivity

What are the trends?

The prevalence of physical inactivity in Missouri adults has decreased slightly since 1990, from a peak prevalence of 36.3% in 1991 to a decade low prevalence of 27.5% in 2001.



Source: CDC, BRFSS using all participating states' data each year.

Data collected every even numbered year; no Missouri data for 1993, 1995, 1997, and 1999.

Data are weighted to each year's U.S. and state population estimates and age-adjusted to the year 2000 U.S. population standard.

How does Missouri compare to others?

The prevalence of physical inactivity in Missouri adults (27.5%), which is 12th highest in the nation, does not differ significantly from that of the U.S. overall median (25.7%).

Prevalence of Physical Inactivity by State and Gender, 2001

State	Overall	Men	Women
U.S. Median	25.7	23.1	28.1
Missouri	27.5	24.3	30.5
Iowa	25.9	23.9	27.9
Kansas	26.7	24.2	29.0
Utah	16.5	15.4	17.5
Louisiana	35.6	32.1	38.8

Source: CDC, BRFSS (2003), http://www.cdc.gov/brfss/

Interventions that work:

Community-Based Interventions to Increase Physical Activity

Regular physical activity substantially reduces the risk of dying of coronary heart disease, the nation's leading cause of death, and decreases the risk for colon cancer, diabetes, and high blood pressure. It also helps to control weight; contributes to healthy bones, muscles, and joints; reduces risk for falls among the elderly; helps to relieve the pain of arthritis; reduces symptoms of anxiety and depression; and is associated with fewer hospitalizations, physician visits, and medications.

Despite the proven benefits of physical activity, in 2001 over 60% of Missouri adults did not get enough physical activity to provide health benefits.

By implementing interventions demonstrated to be effective in increasing physical activity, policy makers and public health providers can help their communities achieve these goals while using community resources efficiently. The Task Force on Community Preventive Services strongly recommends the following intervention to improve physical activity.

- Community-wide campaigns—large-scale, highly visible campaigns with messages directed to large audiences through different types of media, including television, radio, newspapers, movie theaters, billboards, and mailings.
- School-based physical education (PE) - increase the amount of time students spend doing moderate or vigorous activity in PE class or having students be more active during class.
- Social support interventions in community settings—changing physical activity behavior through building, strengthening, and maintaining social networks that provide supportive relationships for behavior change (e.g., setting up a buddy system or setting up walking groups or other groups to provide friendship and support).
- Individually-adapted health behavior change programs—behavior change programs teach behavioral skills to help participants incorporate physical activity into their daily routines.
- Creation of, or enhanced access to, places for physical activity combined with informational outreach activities—efforts of worksites, coalitions, agencies, and communities in attempts to change the local environment to create opportunities for physical activity. Such changes include creating walking trails, building exercise facilities, or providing access to existing nearby facilities.

DHSS Strategies for Supporting the Intervention

1. Partner with communities and other state and federal agencies to implement priority strategies of the statewide physical activity strategic plan, including:
   - Promote regular physical activity among all individuals at all life stages
   - Increase the availability of safe, accessible and affordable physical activity facilities
   - Increase the knowledge and use of evidence-based approaches to physical activity interventions by health care providers, public health educators and teachers
   - Increase the quality and quantity of physical activity for children and adolescents in the school setting
   - Reduce the disparity in physical activity among people of differing age, ethnicity, race, and socioeconomic status
2. Collaborate with St. Louis University Health Communications Research Laboratory to plan and implement community-wide campaigns in selected communities to promote the benefits of walking.
3. Promote the use of *Move For Your Health* physical activity challenge, an eight-week physical activity program that emphasizes social support and behavioral skills to help participants incorporate physical activity into their daily routines.

Success Indicators:

- Prevalence of individuals consuming 5 or more fruits and vegetables daily

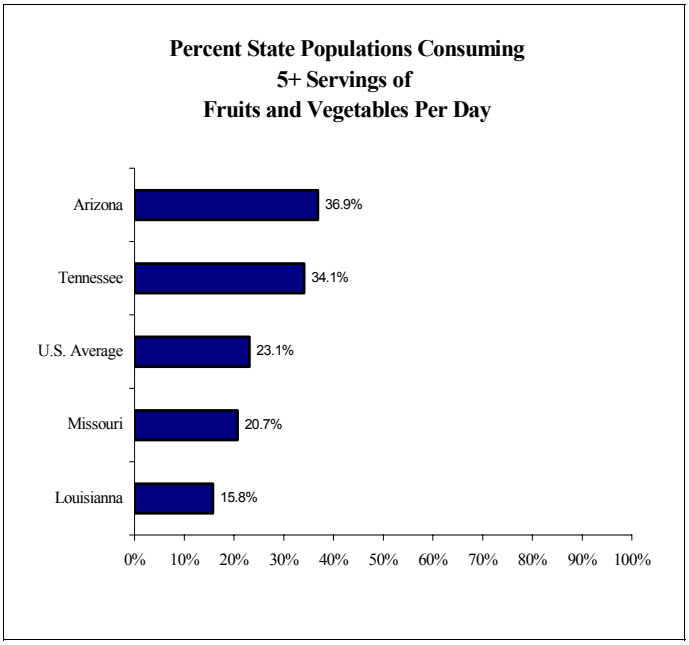
What are the trends?

In 2000, only 20.7% of Missouri adults reported eating 5 or more servings of fruits and vegetables each day. Missouri women reported better fruit and vegetable consumption than Missouri men, with 24.2% of women and 16.8% of men consuming the recommended number of servings. From 1990 to 2000, the proportion of Missouri adults who ate five or more servings of fruit and vegetables remained basically unchanged.

How does Missouri compare to others?

Nationally, the proportion of U.S. adults who eat 5 or more daily servings of fruits and vegetables was 23.1%. In all states, adults reported low levels of daily fruit and vegetable consumption. Arizona reported the highest level (36.9%), while Louisiana reported the lowest (15.8%). Missouri (20.7%) ranked below the national average.

Racial disparities regarding fruit and vegetable consumption are greater in Missouri than nationally. Nationally, 21.3% of African-American adults reported daily consumption of 5 fruits and vegetables, similar to the level of consumption for white adults (23.4%). However, in Missouri only 14.9% of African-American adults reported daily consumption of 5 fruits and vegetables, substantially lower than the level of consumption for white adults (21.4%). Twenty-two percent of Missouri Hispanic adults reported eating the recommended amount.



Source: Behavior Risk Factor Surveillance System 2000 Centers for Disease Control and Prevention

Interventions that work:

Integrated Nutrition and Health Promotion Programs

Good nutrition is essential to good health, plus it is vital to reducing the risk for death or disability due to chronic diseases such as obesity, heart disease, certain cancers, diabetes, stroke, and osteoporosis. It has been estimated that dietary changes could reduce cancer deaths in the United States by as much as 35 percent. Eliminating disparities by providing accessible and affordable opportunities to eat healthily and be active is a goal for all interventions undertaken.

Although there is limited evaluation data on effectiveness in changing long-term eating behaviors, interventions that seem to be working indicate that success requires not only strategies to change individual behaviors but also strategies to change community environments. Environmental influences from workplaces, grocery stores, restaurants, communities and mass media often compete with personal goals to improve eating habits. Long-term improvement in nutritional habits requires the ready availability of appealing, affordable fruits and vegetables.

5 A Day for Better Health

The National Cancer Institute (NCI) and the Produce for Better Health Foundation are lead agencies in the national 5 A Day program that works to increase the intake of fruits and vegetables through educational materials, public service announcements and web and computer technology. Through partnerships with the United States Department of Human Services (HHS) and the United States Department of Agriculture (USDA), the 5 A Day program works to increase awareness of the importance of fruit and vegetable consumption through all federal nutrition programs and other channels of communication with the general public.

Missouri Nutrition Network

The Dietary Guidelines for Americans are the foundation for nutrition education with increasing intake of fruits and vegetables as one of the core nutrition messages. The Missouri Nutrition Network program develops, implements, and evaluates nutrition education initiatives and materials designed to provide effective nutrition information to food stamp eligible families and their children.

Farmers' Market Nutrition Program

The Farmers' Market Nutrition Program provides fresh fruits and vegetables from farmers' markets to Women, Infants and Children (WIC) participants and to senior citizens. The program enables eligible participants to purchase farm-fresh products that help meet their nutritional needs.

DHSS Strategies for Supporting the Intervention

1. Develop and expand partnerships within state government and among public and private sectors to integrate 5 A Day and other messages promoting an increase in fruit and vegetable consumption into existing programs.
2. Identify barriers to consuming fruits and vegetables and effective strategies for promoting increased consumption of fruits and vegetables for all segments of the population through a report generated by the Missouri Council on the Prevention and Management of Overweight and Obesity.
3. Assist communities in identifying and changing policies and environments so that all people have the opportunity to obtain affordable and appealing healthy food choices.
4. Identify and seek potential funding sources to support nutritional interventions.

Success Indicator:

- Percent of health care providers that report adopting two or more of the six primary disease management components into their health care practice

What are the trends?

More than 20 states are developing and implementing disease management programs. Although these programs have primarily been implemented with Medicaid populations, the value to the general population is evident.

Missouri is joining this emerging trend by integrating the chronic disease care management approach into some health systems including the Medicaid fee-for-service program, the federally qualified health centers (FQHCs) and a few hospital systems. Examples of these efforts include:

- The Missouri Medicaid Disease Management Program, which began in November 2002, utilizes physician-pharmacist teams chosen geographically to match the location of the providers with patient locations. Each patient enrolled in the program will receive an initial assessment, an individualized patient care plan using standard clinical guidelines and patient education focusing on prevention and self-management.

- Disease management in the Missouri FQHCs, as part of the Health Disparities Collaborative, focused on diabetes, cardiovascular disease, asthma and arthritis management. From June 2000 to February 2001, preliminary results from the initial six Missouri FQHCs indicated that the centers had improved 11 of the 13 diabetes-related care measures, such as:
  - √ The prevalence of HbA_{1c} (mean blood glucose over the preceding 2-3 months) testing at least three months apart increased by 11%.
  - √ Referrals and receipt of dilated eye examinations increased by 48%.
  - √ Annual foot examinations increased by 25%.
  - √ Receipt of flu vaccinations increased by 62%.
  - √ The setting of self-management goals increased by 24%.

- The Missouri Arthritis and Osteoporosis Program was one of two states' programs awarded a grant from CDC to pilot an arthritis collaborative to develop primary care-based quality improvement activities for arthritis care. Four primary care physician teams were recruited for the project. Although clinical outcome data is not yet available, early successes include the enhanced care that patients received when one physician team converted to group visits and all four teams increased referrals to community resources, physical activity and self-management programs.

How does Missouri compare to others?

Although it is too soon to see the long-term health and economic outcomes from disease management in Missouri, specific research projects are showing positive results such as:

- In a Washington University School of Medicine study of health care costs over 3 months for congestive heart failure in patients under a care management program versus usual care, it was found that although the intervention costs more than the usual care, the intervention patients showed a decline in readmissions and total health care costs.

Missouri could expect results comparable to other states and national programs.

- Florida's Medicaid asthma disease management program reported that average asthma-related inpatient and outpatient hospital costs declined, prescription drug costs increased but total Medicaid expenditures for program participants decreased by 33%.
- National Diabetes Collaborative found for participating centers that a 1% reduction in HbA_{1c} levels translates into annual cost savings ranging from $685 to $950 per patient.
- The Virginia Health Outcomes Partnership asthma disease management program found that emergency room visits per 1,000 patients declined by 41% over a six-month period for patients treated by disease management trained physicians versus an 18% for those treated by physicians not trained in disease management. It was also found that dispensing of recommended drugs increased by as much as 25% and there was an estimated $3 in savings for every $1 spent.

Interventions that work:

Chronic Disease Care Management

Chronic disease care management (CCM) improves chronic illness outcomes by emphasizing the patient's role in self-management and anticipating and providing care on a continuous basis that is customized to the patient's needs and values. Under the CCM approach, practice teams are prepared with the patient's information, care guidelines and other resources at the time of the planned visit; cooperation among the many providers for the multitude of treatments needed is enhanced; and follow-up and self-care is augmented with community referrals and services.

All disease management programs should include the following six key system components:

- **Self-management** that comprises activities to increase patient knowledge, skills and confidence to become engaged in their own care with the provider to define problems, set priorities, establish goals, create treatment plans and solve problems.
- **Decision support** by increasing adherence to care guidelines and incorporating care standards into daily clinical practice as well as affiliating and dialoging with other providers to solve patient problems.
- **Clinical information system** or patient registry to measure the programs effectiveness, generate care reminders, facilitate care planning and provide feedback to providers and patients.
- **Delivery system design** that incorporates development of the multidisciplinary care team, defines roles and delegates tasks for team members including follow-up and use of a patient registry to review care and plan visits.
- **Health Care Organization** where improving chronic care is a part of the organization's mission, goals and business plan; senior leaders provide visible support by removing barriers and providing necessary resources to improve disease management efforts; and quality improvement activities are an intricate part of the care delivery system.
- **Community resources and policies** to identify and link health care systems with effective community programs and resources and encourage patients to participate in community education classes, support groups and reinforce self-care practices. Other community linkages may help with medication costs, case management, in-home assistance, nutritional services and transportation.

Although chronic disease care management has primarily been used for adult patients, it is projected that this approach to care could be equally effective for children. A majority of children in the United States have one or at most two chronic conditions. Therefore, beginning early with self-management and preventive care can substantially improve outcomes and reduce disease-related complications.

DHSS Strategies for Supporting the Intervention

1. Establish and coordinate a team of staff and partners from other agencies, organizations, associations, coalitions, health care system representatives and others to develop, promote and increase adoption of a patient-focused chronic disease care management approach by health care delivery systems in Missouri.
2. Conduct a conference to promote the CCM approach to health care systems and community partners.
3. Assess the capacity and needs of health care settings to incorporate the six components of disease management into practice and provide information and technical assistance.
4. Identify and link health care systems and community resources to improve the care and self-management of individuals with chronic diseases.
5. Develop an evaluation plan with short, intermediate and long-term indicators to determine the effectiveness of the CCM approach among Missouri population groups receiving this care.

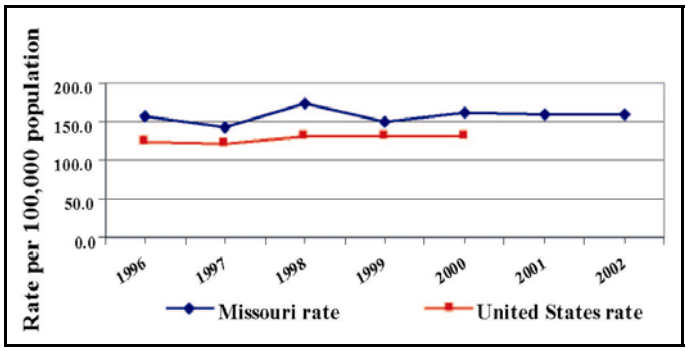
Success Indicator:

- Rate of sexually transmitted diseases

What are the trends?

Though chlamydia is the most common bacterial STD in the US today, it has been typically underreported because infection occurs without symptoms in 75% of women and 50% of men. According to the Centers of Disease Control and Prevention, the reported cases of chlamydia "are merely the tip of the iceberg." The rate of gonorrhea cases has fluctuated somewhat in the past 5 years; however, young African-American women and men remain at highest risk. The numbers of cases of primary and secondary syphilis in Missouri are small in comparison to the other STDs, with the largest numbers reported from St. Louis City.

Rate of Reported Gonorrhea
Per 100,000 Population

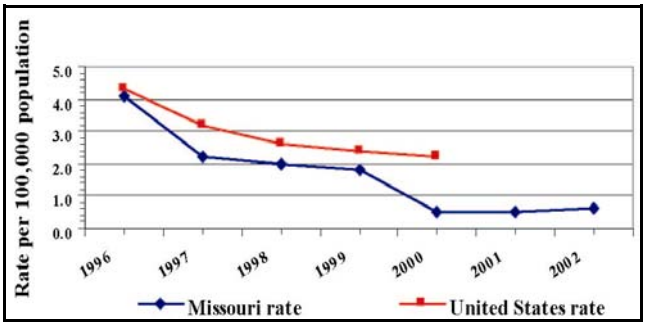


Source: Department of Health and Senior Services, Office of Surveillance, *Epidemiologic Profiles of HIV/STDs in Missouri*

How does Missouri compare to others?

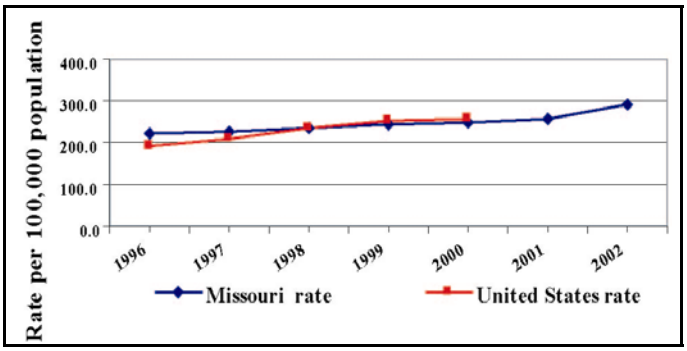
The rate for syphilis, gonorrhea and chlamydia for the state of Missouri and the United States is shown on the following graphs.

Rate of Reported Primary and Secondary Syphilis
Per 100,000 Population



Source: Department of Health and Senior Services, Office of Surveillance, *Epidemiologic Profiles of HIV/STDs in Missouri*.

Rate of Reported Chlamydia
Per 100,000 Population



Source: Department of Health and Senior Services, Office of Surveillance, *Epidemiologic Profiles of HIV/STDs in Missouri*

Interventions that work:

Sexually Transmitted Disease Prevention and Control Programs

Public health, in collaboration with other community partners, plays a central role in developing and implementing sexually transmitted disease prevention and control programs that have the following components:

- Disease surveillance
- Targeted outreach and screening of at-risk populations including sexually active adolescents and women under 24 years of age
- Adequate and timely treatment for infected persons
- Partner elicitation and notification
- Adequate and timely treatment of partners

In addition, health education programs for individuals to reduce risks by engaging in safer lifestyle practices, such as abstinence, maintaining mutually monogamous relationships, limiting sex partners, condom use, and obtaining regular medical care, are effective in preventing sexually transmitted diseases.

According to the Centers for Disease Control and Prevention Program Operations Guidelines for STD Prevention, STD programs exist in highly diverse, complex, and dynamic social and health service settings. The guidelines must be adapted to local area needs because there are differences in the:

- Availability of resources and range and extent of services among different areas
- Level of various STDs and health conditions in communities
- Level of preventative services available
- Amount of financial resources available to provide STD services

While local needs and expectations must be taken into account, all STD programs should establish priorities, examine options, calculate resources, evaluate the demographic distribution of the diseases to be prevented and controlled, and adopt appropriate strategies.

DHSS Strategies for Supporting the Intervention

1. Use disease surveillance to maintain an annual primary and secondary syphilis disease intervention index of 0.6 through 2005.
2. Assure that 85% of outstate patients and metropolitan STD clinic patients with untreated gonorrhea and/or chlamydia get treated.

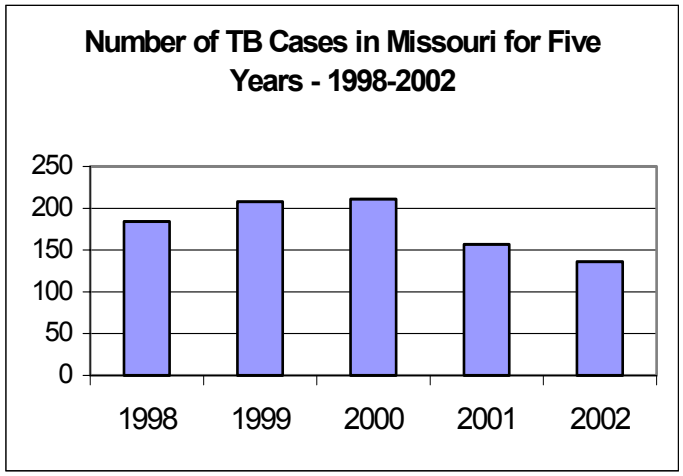
Success Indicators:

- Rate of tuberculosis

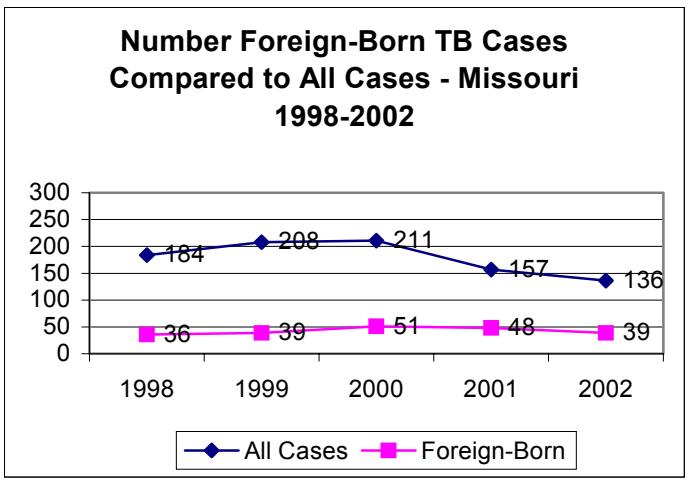
What are the trends?

Missouri is seeing a general decline in the number of cases. Each individual diagnosed with tuberculosis disease has come into contact with 8-12 individuals who must undergo 6-9 months of treatment if they are found to be positive for the disease.

Foreign-born TB cases constituted 1/3 of all cases in 2001. Increased travel of people from countries with high rates of tuberculosis has been a major factor.



Source: Missouri DHSS, Office of Surveillance

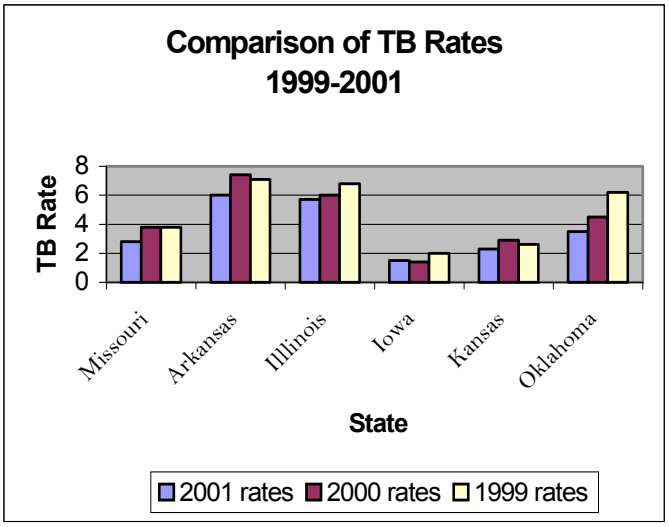


Source: Missouri DHSS, Office of Surveillance

How does Missouri compare to others?

Missouri is exhibiting the same general trends as seen nationally, including the presence of multiple drug resistant forms of TB.

Some of Missouri's border states had the following rates:



Source: Missouri DHSS, Office of Surveillance
Rates per 100,000

Interventions that work:

Tuberculosis Prevention and Control Program

Tuberculosis cases are managed through the "Tuberculosis Information Management System" or TIMS. This is a database system that is integrated with the Centers for Disease Control and Prevention information system, which allows for easy transfer of files. TIMS tracks active disease cases and their treatment status, thus monitoring the move toward the goal of completion of therapy.

Case Management

Case management is ensuring that medications are obtained through local health department facilities, monitoring for adherence to treatment and ensuring that patients are placed on appropriate treatment for TB or TB infection. The nurse case manager ensures that patients are appropriately isolated until they are considered not contagious and not capable of transmitting tuberculosis. Patients receive the 3 or 4 recommended medications for the treatment of TB and the appropriate 1 or 2 medications that are used to treat TB infection. Patients must be treated for at least 6 months, and ensuring adherence is the key to preventing the development of multi-drug resistant tuberculosis (MDR-TB). The case manager often consults with the primary care provider. In addition, the case manager may refer the patients to the appropriate source of care for diagnostic and evaluative services in the public or private sectors.

Education/Behavioral Change

Incentives used to motivate patients to take their TB medications is a strategy well documented in the literature. Incentives that have been used with patients include: the purchase of tokens to take the bus to a local health department or private physician to receive their TB medications; reimbursement for the purchase of gasoline to take them to the local health department; or, assistance with paying the patient's rent for a limited period of time, etc.

Public Health Follow-up

Directly observed therapy (DOT) is used to ensure adherence with treatment. It decreases the threat of transmission and prevents the development of MDR-TB and improves completion of therapy rates. DOT consists of having a health care worker watch a patient take each dose of medication. The reason that this approach is so important is that most people do not take medications as well as they should, so non-adherence with treatment is a big challenge when people are supposed to take TB medications for at least six months. The use of DOT is effective in ensuring completion of treatment.

A contact interview and investigation are effective in stopping further transmission of tuberculosis and preventing the development of future cases of TB disease. Contacts to TB are identified through the contact interview process. Nurses and outreach workers in the local health departments make every effort to test, examine and treat those contacts as needed.

Environmental Modification

The use of environmental controls such as ultraviolet lights in high-risk settings are considered effective in controlling tuberculosis and reducing the opportunities for transmission of TB, especially in congregate settings such as correctional facilities, homeless shelters, etc.

DHSS Strategies for Supporting the Intervention

1. Prioritize and follow-up on those with risk factors for tuberculosis to prevent the development of tuberculosis.
2. Decrease transmission of Multiple Drug Resistant tuberculosis, by ensuring directly observed therapy (DOT) for active cases.

Healthy Seniors - *Overview*

Key Points

- ***Missouri ranks 13th in the nation in the percent of people 65 years of age and over.***
- ***A large percentage of seniors have chronic disease.***
- ***Nationally, one in four seniors report spending at least $100 per month on prescription medications.***

Why is the health of seniors important?

Chronic disease produces a heavy economic burden on older adults due to long-term illness, diminished quality of life, and increased health care costs. Although the onset and severity of chronic disease increases with age, such conditions are not the inevitable consequences of aging.

- Four of the six leading causes of death among seniors are chronic diseases such as heart disease, cancer, stroke and COPD.
- Approximately 80% of all seniors have at least one chronic condition and 50% have at least two.
- African-American seniors have a higher incidence of lung disease, heart disease, and diabetes and significantly higher mortality rates as a result of these conditions, yet only about 47% of African-American seniors received the flu vaccine in 1998 compared to 66% of white seniors. In 1998, only about half as many African-American seniors received pneumonia vaccine compared to white seniors.

Chronic disease increases the need for higher levels of services.

- Chronic disease and related activity limitations increase the need for inpatient and extended care.
- Chronic conditions such as arthritis, diabetes, and heart disease often lead to declines in overall functioning and a reduced ability to remain in the community.
- Every year, chronic diseases account for more than 70% of the one trillion dollars the United States spends on health care expenditures.

Why is the health of seniors a critical issue for Missouri?

- Missouri ranks 13th in the nation in the percent of people 65 years of age and over.
- By 2025, Missouri's senior population is projected to be 1,625,394 or about 20% of Missouri's total population.

Chronic Disease

- The risk of chronic disease increases with age, so growth in Missouri's senior population will ensure an increase in the prevalence of chronic diseases in the state.
- In 1999, Missouri spent $3 billion on cardiovascular disease-related hospitalizations.
- In 2000, 15.6% of Missouri seniors age 65 and over reported a diagnosis of diabetes.
- While seniors and persons with disabilities comprised 21.5% of Medicaid enrollees in 2001, Missouri spent 69.6% of its Medicaid funding on these seniors and persons with disabilities.
- Tobacco use, lack of physical activity, unhealthy eating behaviors and obesity are major contributors to the number of Missourians with chronic conditions.

Immunization

- In 2001, only 67.5% of individuals aged 65 and older were immunized against influenza and only 56% were vaccinated against pneumococcal disease.
- There is currently no systematic approach to adult immunizations.
- Pneumonia and influenza are among the top ten causes of death in Missouri annually (resulting in 1,594 deaths in 2001) and disproportionately affect seniors age 60 and over.
- Adults and seniors age 18-64 may not have health insurance or may have insurance that doesn't cover influenza and pneumococcal vaccines.

Home and Community Care

- In 2001, the average annual nursing home cost per resident was $35,607. Keeping seniors in the community and out of nursing homes decreases health care costs.
- The *Olmstead Decision* created the legal presumption that home and community care is preferable to institutional care.

Missouri SenioRx Program

- Estimates indicate that one-third of Medicare beneficiaries have no drug coverage at all. They must pay out of pocket for some or all of the cost of the prescription drugs they use. The total spending of seniors on prescription drugs increased 44 percent from 2000 to 2003.
- One in four seniors report spending at least $100 per month on their prescription medications and 22% let prescriptions go unfilled and skip doses.
- During 2002, 18,800 seniors enrolled in Missouri's SenioRx program. For these seniors, this means a total of $18 million dollars, directly attributable to their health, out of pocket savings to help them afford other necessities.

SUCCESS INDICATORS

	Healthy People 2010	2000 Baseline	2001 Actual	2002 Actual	2003 Target	2004 Target	2005 Target
Hospitalization rates (per 10,000 population) due to chronic diseases among Missouri senior adults:							
Diabetes with and without complications	25.7	42.0	48.2	Avail 7/04	36.1	34.8	33.1
Heart Disease (CVD)	657.7	1148.1	1208.8	Avail 7/04	984.4	942.2	895.1
Lung Disease (COPD)	68.5	114.0	129.4	Avail 7/04	97.8	93	88.4
Percentage of Missouri senior adults immunized:							
Influenza (persons 65 years of age)	90%	76.6%	67.5%	Avail 12/03	80.6%	81.9%	83.3%
Pneumococcal	90%	66.5%	56%	Avail 12/03	73.5%	75.9%	78.3%
Percent of unduplicated Missouri Care Options (MCO) screenings that result in authorization of state-funded home and community-based services	N/A	31%	60%	*	36%	39%	43%

*Data not available

Success Indicators:

- Rate of hospitalization due to the chronic diseases of heart disease, lung disease (COPD), and diabetes among Missouri senior adults
- Immunization rates among seniors for influenza

What are the trends?

In-Patient Hospitalization Rates (per 10,000) for Adults 65 years and older

Disease Specific	1996	1997	1998	1999	2000
Heart and circulation	1051.6	1071.7	1082.5	1101.6	1148.1
COPD and bronchiestasis	105.6	106.8	115.7	127.7	114.0
Diabetes without complications	0.7	0.8	1.0	1.2	1.1
Diabetes with complications	36.8	38.2	39.0	38.5	40.9

Source: Missouri Department of Health and Senior Services, Missouri Information for Community Assessment (MICA), 1996-2000

According to 2000 mortality indicators, Missourians are dying at higher rates from many chronic diseases, pneumonia and influenza, than the nation as a whole.

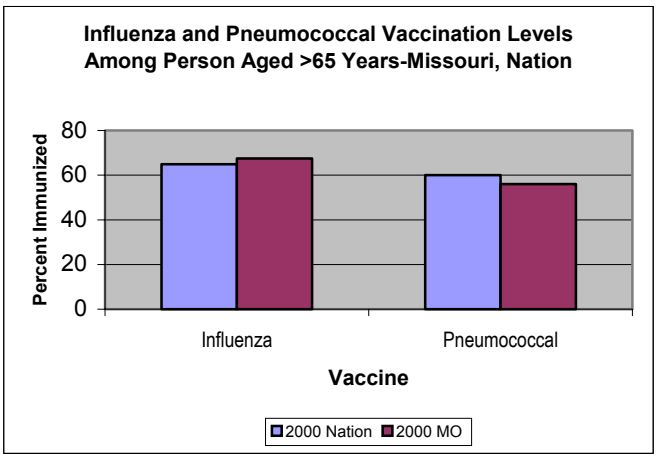
Missouri vs. United States Comparisons in Age-Adjusted Mortality Indicators 2000

	Missouri	U.S.	Difference
Cancer (all malignant neoplasms)	205.6	199.6	High
COPD	47.0	44.2	High
Diabetes	24.6	25.0	N/S
Heart Disease	288.3	257.6	High
Stroke	63.6	60.9	High
Lung Cancer*	63.6	56.1	High
Asthma	1.4	1.6	N/S
Pneumonia & Influenza	24.5	23.7	N/S

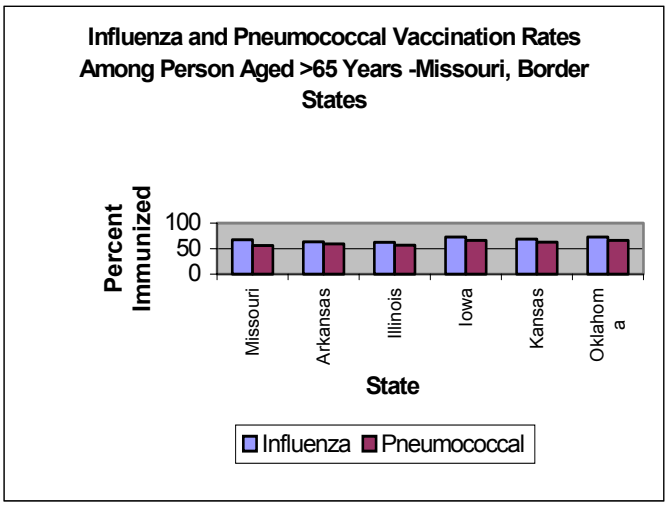
Source: Missouri Department of Health & Sr. Services, Bur. Of Health Data Analysis, and National Center for Health Statistics, *National Vital Statistics Reports Vol.51, No.9*

How does Missouri compare to others?

Although Missouri compares favorably with the 2000 national median for influenza and pneumonia diseases, it is still well below the Healthy People 2010 goal.



Source: CDC Risk Factor Survey, 2000 BRFSS



Source: CDC Risk Factor Survey, 2000 BRFSS

Rates are per 100,000 age-adjusted to U.S. 2000 standard population
"N/S" indicates that the rates are not statistically significantly different at the .05 level.

* Includes trachea and bronchus.

Interventions that work:

Community Initiatives and Programs that Promote Physical Activity, Nutrition, and Immunization for Seniors

According to Assistant Secretary for Aging Josefina Carbonell, "No one is too old to enjoy the benefits of regular exercise. Healthy lifestyles, which include proper nutrition, are more influential than genetic factors in avoiding deterioration traditionally associated with aging." The impact of *lack* of physical activity on medical costs is likely to grow as a result of the aging U.S. population, unless trends in physical activity change.

Evidence-based community preventive services that could be used to promote physical activity, nutrition, and immunization for seniors include:

Physical Activity —

- Clinicians are encouraged to work closely with patients to assess levels of physical activity and identify ways to overcome barriers to increasing those activity levels.
- Community-wide campaigns with messages regarding physical activity behavior for seniors promoted through television, radio, newspaper columns and inserts, and trailers in movie theaters.
- Individually-adapted health behavior change programs.
- Social support interventions in community settings that focus on changing physical activity behavior through building, strengthening, and maintaining social networks that provide supportive relationships for behavior change. Strategies include creating new social networks in a social setting, setting up a buddy system, contracting with another person to complete specified levels of physical activity, or establishing walking groups or other groups to provide friendship and support.
- Creation of, or enhanced access to, places for safe physical activity combined with informational outreach activities (e.g. building trails or facilities or reduce barriers to such places).

Nutrition —

- Programs such as Older Americans Act
- Nutrition Programs, 5 A Day for Better Health
- Farmers' Market Nutrition Program.

Immunization —

- The Task Force on Community Preventive Service found that standing orders are effective in improving vaccine coverage among adults when used alone or as part of a multi-component intervention in a number of settings.
- Standing orders involve programs in which non-physician medical personnel prescribe or deliver vaccinations to clients without direct physician involvement at the time of the visit. These programs are carried out in clinics, hospitals, and nursing homes. Studies indicate that standing orders are particularly effective in improving the delivery of vaccines for influenza and pneumonia.

DHSS Strategy for Supporting the Intervention

1. Work with the providers of in-home services and the Area Agency on Aging to educate seniors on the importance of nutrition, physical activity, and immunization.

Success Indicator:

- Percent of unduplicated Missouri Care Options (MCO) screenings that result in authorization of state-funded home and community-based services

What are the trends?

From 1996 to 2001, the percentage of unduplicated MCO screenings resulting in home and community - based or residential care facility placement fluctuated.

Percentage of Unduplicated MCO Screenings Resulting in Home and Community-Based or Residential Care Facility Placement

	Screenings	*HCB	**RCF	Total	Percentage
2001	23,762	5,713	2,194	7,907	33.3%
2000	22,835	7,091	2,878	9,969	43.7%
1999	22,074	6,482	2,818	9,300	42.1%
1998	22,017	5,999	2,534	8,533	38.8%
1997	21,753	4,043	2,594	6,637	30.5%
1996	19,603	4,399	1,983	6,382	32.6%

Source: DHSS, Division of Senior Services, Research and Evaluation.

*Home and Community Based Services
**Residential Care Facility Placement

In 2001, the average annual nursing home cost per resident was $35,607. In comparison, home and community-based services averaged $4,177 annual cost per client. Residential care averaged $4,672 annual cost per resident.

Keeping seniors in the community and out of nursing homes decreases health care costs.

How does Missouri compare to others?

There are no exact comparisons between Missouri and other states as other states don't have Missouri Care Options (MCO). However, other states' efforts to reduce nursing home admissions can be compared.

In 1995, Illinois mandated preadmission screening for all nursing home applicants regardless of income. Persons who didn't meet the state's standard of impairment could enter a nursing home using their own resources. Average Medicaid nursing home load dropped by more than 1,000 residents from 1996 to 1997.

In 1982, Oregon, through home and community services, made nursing home placement the placement of "last resort." From 1990 to 1996, Medicaid residents dropped by 900 despite the fact that the number of Oregonians aged 85 and over increased 40% during that time period.

In 1993, Maine:
1) Limited nursing home care to those with the most severe medical needs or disabilities;
2) Provided incentives to nursing homes to convert some beds to lower levels of care;
3) Increased appropriations for home care services;
4) Developed additional residential care options.

Result: The number of Medicaid residents dropped by almost 1,000 from 1995 to 1997.

Also, some states used Medicaid Home and Community Based Care Waiver programs to reduce nursing home placements by:

1) Expanding the range of services covered by the waiver to include home modification, emergency response systems and nutrition programs
2) Setting income eligibility standards for waiver services as high as 300% of the monthly SSI levels
3) Offering waiver and personal care services in residential care/assisted living facilities
4) Developing supportive housing care options.

Recent attention from the Missouri General Assembly resulted in appropriations to enhance the MCO function by creating a community counselor position to be placed in hospitals to assist in transitioning residents to the community from hospitals and nursing facilities.

Interventions that work:

Integrated Home and Community-Based Services

The U.S. Supreme Court's *Olmstead Decision* created the legal presumption that home and community care is preferable to institutional care. Consequently, Missouri is committed to increasing the number of seniors whose long-term care is provided in their homes and communities. The Missouri Care Options (MCO) program is a legislative initiative intended to ensure that adults who are facing decisions regarding long-term care are aware of information sufficient to exercise choice regarding the selection of their care.

MCO offers home and community long-term care services to adults 18 years and older who are Medicaid eligible, or potentially eligible, and in need of assistance. MCO also offers individuals who reside in long-term care facilities the option of home and community long-term care services if they qualify for care in a more independent setting.

In-home services include:

- Help with activities of daily living such as grooming, bathing, dressing, eating
- Help with complex physical needs
- A companion to relieve family caregivers, giving them time to run errands or attend to personal needs
- Help with housekeeping, laundry, etc.
- In-home nursing care
- Supervised adult day health care programs
- Nutritious meals delivered to the home through arrangements with the Area Agencies on Aging

DHSS Strategies for Supporting the Intervention

1. Discharge planning with hospitals to refer, inform and coordinate home and community services as options to nursing home care for seniors and their families.

2. Work with Division of Medical Services to expand the range of services covered by the waiver to include home modification, emergency response systems, transportation and nutrition programs.

3. Increase monitoring that focuses on quality of care versus paper compliance, implement outcome based contracts with more options for dealing with noncompliant providers, and require licensure for in-home service providers.

Safe, Supportive Environment - *Overview*

Key points

- ***Creating a safe environment includes protecting the public, preventing and controlling disease.***
- ***Children should be free of abuse and neglect.***
- ***The quality of care received by seniors is vital to their health and safety.***

Why is a safe, supportive environment important?

Living in unhealthy environments decreases years of healthy life and life expectancy. The health of every individual, regardless of the stage in the life cycle (infant, child, adolescent, adult or senior), is affected by the environment in which he or she lives.

- The premise that children should be safe in their child care facility, free from the risk of child abuse or neglect, is basic.
- The quality of the care received by senior citizens is vital to their health and safety.
- Maintaining a safe environment requires controlling or eliminating hazardous substance exposure and the health impact associated with a biological, chemical, or nuclear event.

Why is a safe, supportive environment a critical issue for Missouri?

- **Child Care—**
  - ✓ In Missouri 426,489 children under the age of six live in households with at least one parent. (2000 census data)
  - ✓ On June 30, 2002, Missouri licensed child care facilities and license-exempt facilities (nursery schools and facilities operated by religious organizations) with a capacity of approximately 149,000 children.
- **Senior Care —**
  - ✓ In 2025, Missouri's population of seniors is projected to be approximately 20% of Missouri's total population.
  - ✓ Approximately four of every 10 people turning age 65 will use a nursing home at some point in their remaining life.
  - ✓ At any given time, about 5% of Missouri's senior population (49,185 in 2000) lives in a nursing home.
- **Health Care —**
  - ✓ Adequate systems of care, with appropriate staffing levels of health care practitioners, are essential to the early detection and treatment of disease in order to lessen the impact on the health and financial status of individuals.
  - ✓ Systems for prevention and early detection of disease, both chronic and infectious, are a financial benefit to communities.
  - ✓ Missouri's hospitals admit more than 750,000 patients each year.
  - ✓ More than 110,000 procedures were performed in Missouri's ambulatory surgical centers during 2000.
  - ✓ In 2001 there were approximately 18,600 life-threatening ambulance and helicopter runs in Missouri.
- **Safe Environment—**
  - ✓ Extended exposure to certain hazardous substances can lead to chronic adverse conditions of many bodily systems and illnesses, such as various cancers, kidney disease, liver disease and damage to the central nervous system.

- ✓ Acute exposures to high levels of hazardous substances can lead to various illnesses and even death. As a result, there are increases in health care costs and psychological effects of the poisoned individuals and their families. If the exposure came from a hazardous waste site near a property, decreased property values may also occur and cause economic
- ✓ Surveillance systems enable the quick detection of health changes that may be associated with a biological, chemical or nuclear event. In 2003, the High Alert Surveillance System was enhanced into sentinel surveillance. There are up to 100 strategically selected sites that report syndromic data **daily**, in order to have near "real time" information to make timely decisions.

SUCCESS INDICATORS	Healthy People 2010	2000 Baseline	2001 Actual	2002 Actual	2003 Target	2004 Target	2005 Target
Incidence of child abuse and neglect in regulated child care facilities	N/A	45	43	49	39	37	35
Incidence of elder abuse	N/A	9,870	9,761	9,906	9,906	9,700	9,700
Percent of Class I deficiencies issued to nursing homes	N/A	4.5%	2.3%	1.2%	2.3%	2.3%	2.3%
Percent of monitored in-home service providers sanctioned for quality of care issues	N/A	N/A	N/A	N/A	Establish Baseline	N/A	N/A
Incidence of substandard hospital care (accidental tissue penetrations or hemorrhages, foreign objects left in body, instrument failures, medication errors and sterilization failures as measures of medical errors)	N/A	2,570	2,803	Avail Jan.04	3,330	3,596	3,830
Number of federally designated geographic health professional shortage areas	N/A	38	38	36	35	34	33
Incidence of poisoning from hazardous substances	N/A	49	167	175	48	46	44
Percent of sentinel surveillance sites that report daily syndromic data	N/A	N/A	N/A	NA	85%	90%	95%

Success Indicator:

- Incidence of child abuse and neglect in regulated childcare facilities

What are the trends?

- The number of complaints registered in regulated child care facilities declined from 1999 to 2002 while the number of regulated child care providers for those same years fluctuated.
- The number of allegations of child abuse/neglect increased from 408 in 1998 to 449 in 2002. These were co-investigated with staff from the Division of Family Services.
- In 2002, there were 49 substantiated child abuse/neglect findings in regulated child care facilities, in addition to violations of licensing standards identified in each of those investigations.
- During the two calendar years ended December 31, 2002, the Family Care Safety Registry registered 71,518 child care workers and processed 46, 928 requests for background screenings on child care workers.

CHILD CARE	1998	1999	2000	2001	2002
Number of regulated child care providers	4,912	4,625	4,649	4,630	4,467
Number of complaints in regulated child care facilities	N/A	1,919	2,086	1,825	1,712
Number of co-investigations involving allegations of child abuse/neglect in regulated child care facilities	408	353	343	423	449
Incidence of substantiated child abuse and neglect occurring in regulated child care facilities	60	57	45	43	49

Source: Missouri Department of Health and Senior Services, Division of Health Standards and Licensure, Bureau of Child Care.

Success Indicators:

- Percent of in-home service providers monitored that were sanctioned for quality of care issues
- Incidence of elder abuse
- Percent of Class I deficiencies issued to nursing homes

What are the trends?

In 2002, the reports of abuse/neglect/exploitation (A/N/E) of the elderly and adults with disabilities in the home and community setting remained nearly the same as in 2001. Of the A/N/E investigations completed in 2002, 75% were found to be either supported by a substantial amount of evidence or were probable or likely. The remaining investigations did not find evidence to support the reported allegations.

- In 2002, the reports of abuse/neglect (A/N) of the elderly and adults with disabilities in institutional settings decreased 16% from 2001. Of the A/N investigations completed in 2002, nearly 23% were found to be valid. The remaining investigations were found to be invalid or could not be verified.
- The number of Class I deficiencies increased in 2002, while the percentage of Class I deficiencies continued to drop. This occurred due to the continuing rise in the total number of deficiencies issued for all classes.
- During the two calendar years ended December 31, 2002, the Family Care Safety Registry registered 54,383 elder care and personal care workers and processed 35,708 requests for background screenings on elder care and personal care workers.

SENIOR CARE Elder Abuse-Home or Community Setting	1998	1999	2000	2001	2002
Reports of A/N/E in home or community setting*	13,386	14,099	14,732	15,718	15,331
Completed investigations of home and community A/N/E*	11,761	12,467	12,572	12,773	12,976
Reason to Believe	6,630 (56.4%)	6,851 (55.0%)	7,169 (57.0%)	7,204 (56.4%)	7,228 (55.7%)
Suspected	2,581 (21.9%)	2,687 (21.5%)	2,447 (19.5%)	2,363 (18.5%)	2,517 (19.4%)
Elder Abuse - Institutional Setting					
Reports of A/N in long-term care facility*	716	683	787	849 (corrected)	709
Completed investigations of A/N in long-term care facility*	698	616	922	818 (corrected)	708
Valid	154 (22.1%)	185 (30.0%)	254 (27.5%)	194 (23.7%) (corrected)	161 (22.8%)
Class I Deficiencies					
Number and Percent of Class I deficiencies issued to nursing homes	N/A	124 (9.4%)	79 (4.5%)	54 (2.3%)	71 (1.2%)

*Includes seniors and adults with disabilities.
Source: Missouri Department of Health and Senior Services, Division of Health Standards and Licensure, Section for Long-Term Care Regulation; Missouri Department of Health and Senior Services, Division of Senior Services.

Success Indicator:

- Incidence of substandard hospital care due to accidental tissue penetrations or hemorrhages, foreign objects left in body, instrument failures, medication errors and sterilization failures as measures of medical errors

What are the trends?

Medical errors continue to emerge as one of health-care's biggest safety issues.

In 2000, the Institute of Medicine (IOM) reported that preventable medical errors in United States hospitals might result in 44,000 to 98,000 deaths each year. Using the lowest estimate, medical errors in hospitals becomes the eighth leading cause of death. More people die of preventable medical errors than motor vehicle accidents (43,458), breast cancer (42,297), or AIDS (16,516) each year.

One type of medical error, medication-related error, does not always result in actual harm to patients, but those that do cause harm are costly. The IOM report states that two out of every 100 admissions experience a preventable adverse drug event resulting in an increased hospital cost of $4,700 per admission. In 2000, there were 680,571 hospital admissions in Missouri. Using the information above the department estimates that medication errors increased hospital costs by $63,970,000 in Missouri in 2000.

Since hospitals represent only a part of the health care delivery system, the actual number of medical errors across the health care system, including the home care system, could be even higher.

Although Missouri does not currently have a mechanism for collecting data on all medical errors, hospital discharge information indicates an upward trend over the past several years in the reporting of certain inpatient and outpatient discharge codes that could be considered as medical errors.

Incidence of Substandard Hospital Care

HEALTH CARE	1997	1998	1999	2000	2001
Incidence of substandard hospital care due to accidental tissue penetration or hemorrhage, foreign object left in body, instrument failure, medication errors and sterilization failures as measures of medical errors	2,207	2,485	2,345	2,570	2,803

Source: Missouri Department of Health & Senior Services, Center for Health Information Management & Evaluation

Complaints received from consumers regarding care provided by DHSS-regulated health care providers can also be used to help describe the problem. The following chart shows the increase in the total number of complaints received over the past five years.

Consumer Complaints Regarding Care Provided By DHSS Regulated Health Care Providers

Provider	1998	1999	2000	2001	2002
Hospitals	100	243	409	453	533
EMS[1]	48	49	61	39	54
Home Health and Hospice	44	51	47	56	52
Other Medical Facilities[2]	**	**	19	24	28

Source: Missouri Department of Health and Senior Services, Division of Health Standards and Licensure.

*Care provided by DHSS-regulated health care providers

**Not available

[1] This number reflects a combination of investigated complaints concerning ambulance services, and emergency medical technicians.

[2] This number reflects complaints received concerning abortion clinics, birthing centers, ambulatory surgical centers, end-stage renal disease facilities, rural health clinics, laboratories and x-ray facilities.

Interventions that work:

Enforcement of the Rules and Regulations (both state and federal) Pertaining to Child Care, Senior Care and Health Care

One of the main interventions in securing an environment that is safe, supportive and conducive to a healthy lifestyle for all Missourians is enforcement of the rules and regulations (both state and federal) pertaining to child care, senior care, and health care.

Enforcement begins with ensuring that the necessary statutes, regulations, policies and procedures are in place to allow adequate enforcement activities. The major components of enforcement of state and federal rules and regulations include:

- Licensure and inspection
- Follow up on complaints
- Quality monitoring and training

Maintaining good communication with staff, providers, and the public is an important component of enforcement. Staff must receive thorough and timely training on rules and regulations to ensure complete and consistent inspection, licensing, and investigative activities. Providers must be kept informed of changes in rules and regulations, they must be appropriately informed in a timely manner of deficiencies and corrective action that is needed, and they must be provided information on quality of care improvement topics. It is vitally important that the public has access to information about providers, and rules and regulations so they can make informed decisions. Consumers must also know whom to contact if they need additional information or if they want to communicate a concern about a regulated provider, whether it be child, senior, or health-care related.

Missouri has been involved since October 2001, along with the state of Utah, in the Utah-Missouri Patient Safety Demonstration Project. This is a 3-year study funded by the Agency for Healthcare Research and Quality (AHRQ). It is one of 24 projects funded by AHRQ to study patient safety reporting systems. The study is designed to evaluate the use of hospital-reported discharge data to monitor patient safety events and also to provide information feedback to hospitals via quarterly adverse event reports. The project will also evaluate the use of the quarterly reports as an information resource for hospital licensure surveys. The project involves collecting information from 40 selected hospitals in Missouri. Information will come not only from the discharge data, but also from a sample of medical records selected for review and a survey on hospital practices and policies designed to reduce patient safety problems. Part of the project includes making available to the 40 selected hospitals educational materials and activities which emphasize evidence-based best practices and recommended strategies for improving patient safety in the hospital setting.

DHSS Strategies for Supporting the Intervention

1. Develop and implement methods for obtaining feedback from consumers on the services of providers regulated by the DHSS.
2. Develop and implement consistent methods for assignment and tracking of complaint investigations to ensure timely response.
3. Develop and implement inspection and investigative processes that cross program lines in order to more efficiently and effectively utilize resources.
4. Review and analyze statistical information to assist in evaluating the success of enforcement and communications efforts.
5. Develop a plan, utilizing available resources, to address the issue of medical errors.

Success Indicator:

- Number of federally designated health professional shortage areas

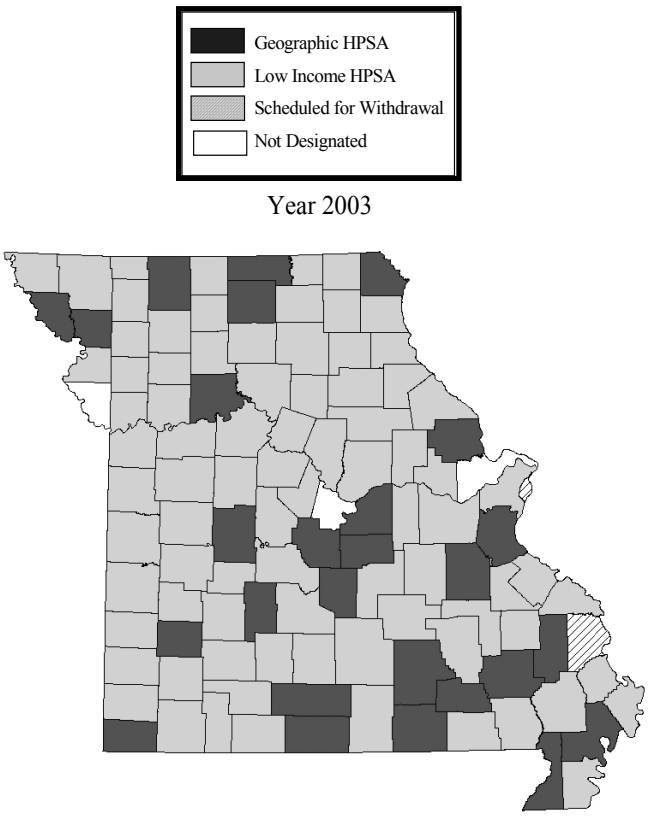
What are the trends?

Although the number of physicians and especially primary care physicians has increased, the number of federally designated health professional shortage areas (HPSAs) has also increased. These seemingly conflicting facts indicate improvements in primary care access for people in general, while of access for low-income citizens is decreasing.

There are two different types of HPSAs, geographic and low-income. Geographic HPSAs are based on the ratio of primary care physicians to the general population, while low-income HPSAs are based on the amount of care provided to Medicaid and uninsured patients.

In the past five years the number of geographic HPSAs has decreased in Missouri by 25%. However, the number of counties in the state designated as low-income HPSAs has increased by more than 1,000%. The Primary Care HPSA map shows the distribution of these two types of HPSAs in Missouri.

Designated Primary Care Health Professional Shortage Areas By County and By Type As of October 1, 2003



Interventions that work:

Comprehensive Approach Focusing on Eliminating or Reducing Primary Care Health Professional Shortage Areas

Public health, in collaboration with other state and local partners, plays a central role in developing and implementing the following interventions focused on eliminating or reducing Primary Care Health Professional Shortage Areas:

- Developing community-based systems of care;
- Recruitment of health professional students from areas of need;
- Provision of incentives to health professional students to return to underserved areas; and
- Provision of clinical training experiences in underserved communities.

DHSS Strategies for Supporting the Intervention

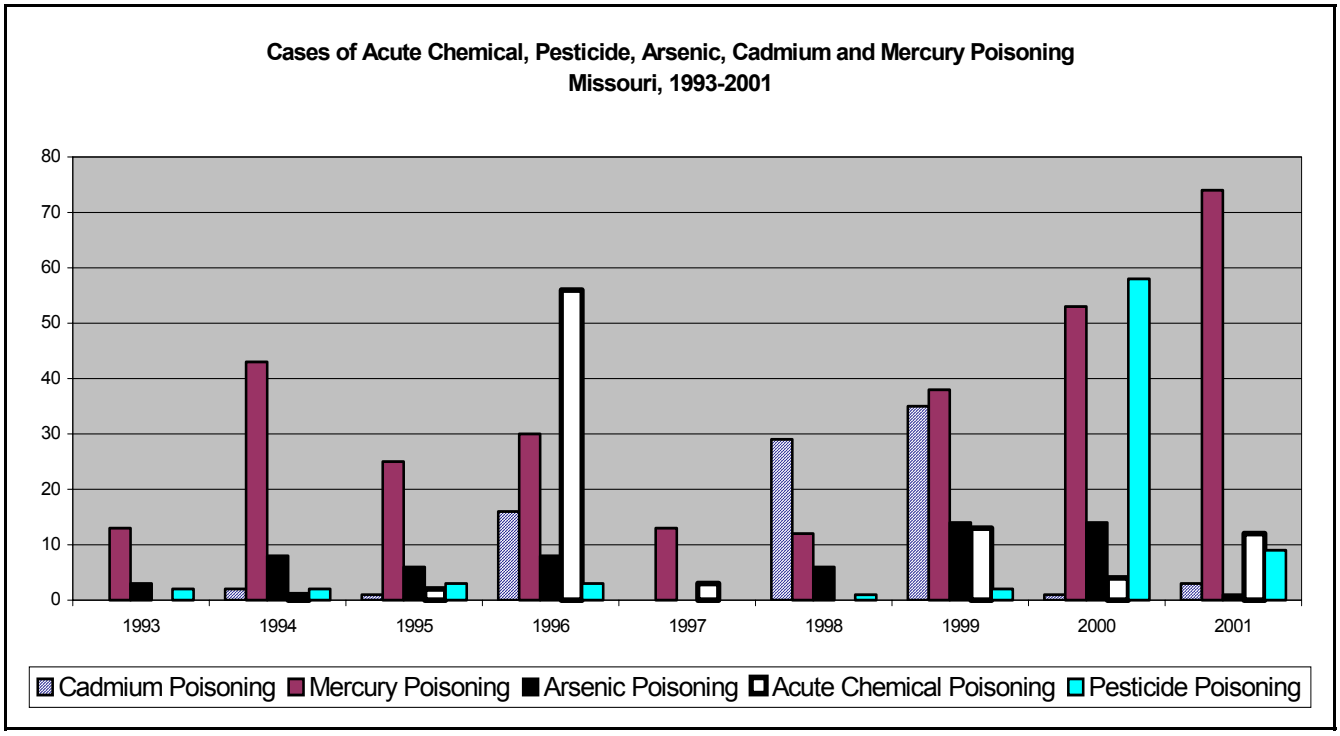
1. Expanding and enhancing health professional incentive programs to include student financial aid, loan repayments, and direct subsidies in order to increase the number of participating primary care professionals.
2. Developing the primary care component of the Missouri Health Care Workforce model, to determine need for and supply of population-based health care services.
3. Increasing the number of community-based health care delivery systems that accept Medicaid, Medicare assignment and providing sliding fee scales to increase access to services for the under-insured and uninsured populations.
4. Developing and implementing a tool to prioritize Missouri communities based on need for health care services and the infrastructure needs to obtain those services.
5. Coordinating with the Department's community development initiatives to build support for community based systems of care on an ongoing basis.

Success Indicators:

- Incidence of poisoning from hazardous substances (acute chemical, heavy metal, lead and pesticides)
- Percent of sentinel surveillance sites that report daily syndromic data

What are the trends?

The following table shows the number of acute chemical, pesticide, arsenic, cadmium and mercury poisonings from 1993 through 2001. In general, trends are not apparent and the numbers of cases reported are relatively low. The increase in the number of mercury poisonings may be related to the addition of two mercury case reporting sources (laboratories) during 2001.



Source: Department of Health and Senior Services, Division of Environmental Health and Communicable Disease Prevention, Office of Surveillance.

Interventions that work:

Environmental Management:Hazardous Substances

The purpose of environmental management is to determine the source(s) of exposure to hazardous substances or biological contamination and identify control measures.

Successful interventions range from residential soil replacement and health education in lead-contaminated communities to carbon filtration and other treatment systems on private drinking water wells contaminated with volatile organic chemicals. Prior to these interventions, public health assessment activities should regularly take place (e.g., annual private well sampling around hazardous waste sites).

DHSS Strategies for Supporting the Intervention

1. Respond to public inquiries on hazardous substances and environmentally induced human diseases/ conditions.
2. Assess human exposure to substances at hazardous waste sites.

Interventions that work:

Emergency Response and Terrorism

Biological contamination or threats: Medical research has revealed decreased morbidity and mortality of life threatening illnesses if intervention occurs in the syndromic phase of the illness. Promoting awareness and education of both the threat of bioterrorism and the need for participation in both active and passive surveillance statewide motivates hospitals, emergency rooms, outpatient facilities, physicians, schools and others to become reporting sites.

In direct response to the events of September 11, 2001, the Centers for Disease Control and Prevention mandated that each state initiate a syndromic bioterrorism surveillance system. Early detection of possible biological or chemical threats decreases morbidity. Determining trends and aberrations at this stage will allow timely interventions and restrict the scope and magnitude of an outbreak or bioterrorist event where waiting for confirmed diagnosis could cause interventions to come too late to be useful.

Missouri was the first to implement a statewide bioterrorism surveillance system based on syndromic categories derived from the CDC that promotes awareness and education of both the threat of bioterrorism and public health emergencies and participation in both active and passive surveillance statewide to hospitals, emergency rooms, outpatient facilities, physicians, schools and other reporting sites of strategic significance. Through this system we have been able to identify school absenteeism, outbreaks of influenza and other indicators of illness, which have led to early interventions and control measures to prevent the spread of disease. Syndromic data is critical to the state's rapid response in the event of a terrorist act.

The Syndromic Categories of Data Collected

Influenza-like Illness
Hemorrhagic Disease
Gastrointestinal Illness
Neurologic Illness
Rash Illness
Fever Illness
Respiratory Illness (Other than influenza-like illnesses)
Chemical Exposure

DHSS Strategies for Supporting the Intervention

1. Develop and maintain a sentinel surveillance system that collects and analyzes syndromic data in near real-time.
2. Detect and initiate timely response to chemical, biological, radiological terrorist events and public health threats at the earliest possible point.
3. Ensure that each region will have a regional bioterrorism plan that is approved by the DHSS.

Interventions that work:

Population-Based Surveillance Systems

Surveillance systems within the Missouri Department of Health and Senior Services are set up to track many diseases and health conditions, such as communicable diseases, cancer, lead poisoning, sexually transmitted diseases, behavioral risks, birth defects, head injuries, etc.

These systems protect Missourians by enabling the appropriate response to identify high risk populations and threats to the population. These systems are dependent upon working in partnership with private medical care providers.

Disease surveillance systems provide for the ongoing collection, analysis, and dissemination of data to prevent and control disease. Disease surveillance data are used by public health professionals, medical professionals, private industry, and interested members of the general public in numerous ways to:

- identify cases for investigation and follow-up
- estimate the magnitude of a health problem and follow trends in its incidence and distribution
- formulate and evaluate control and prevention measures
- detect outbreaks or epidemics and generate appropriate interventions
- monitor changes in infectious agents (e.g., antibiotic resistance, emerging infections)
- facilitate epidemiologic and laboratory research detect changes in health practice (e.g., impact of use of new diagnostic methods on case counts)
- facilitate planning (e.g., allocation of program resources, policy development)

DHSS Strategies for Supporting the Intervention

1. Create electronic transfer of data from laboratories and medical care providers to the department.
2. Improve the feedback reports to the providers.

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